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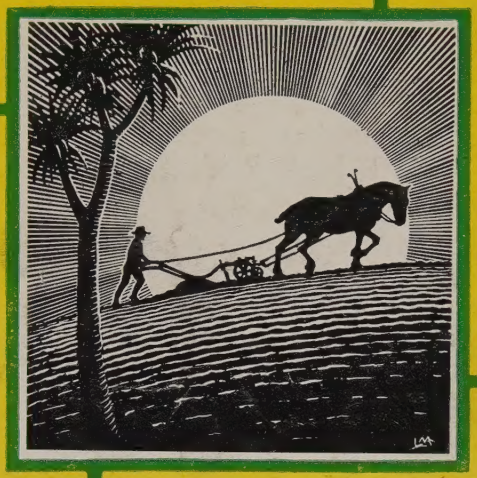

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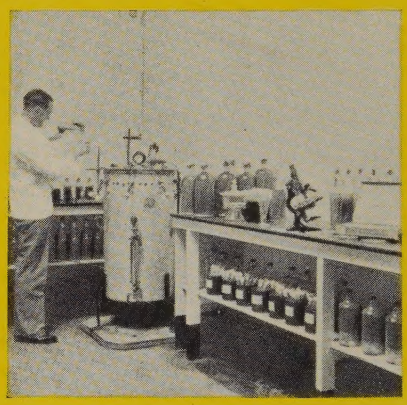

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# Don't Gamble On Nature

## By Providing Ample Winter Feed You Will Prevent Many Stock Troubles

G. F. HUDSON, Inspector of Stock, Wairoa.

ALTHOUGH in many instances a certain amount of supplementary feeding is carried out during the winter months, it is very evident that the quality and quantity given is far below that required. Were the far-reaching effects of insufficient and unbalanced feeding realised, there is no doubt that more attention would be paid to this important side of farming operations.

Farmers are often rather much inclined to gamble on Nature supplying sufficient pasture growth for their stock in winter, instead of providing against drought and severe winters by the growing of supplementary feed. It is the purpose of this article to point out some of the effects of underfeeding, especially during the winter months, on stock.

Research has shown that proper feeding, especially during the winter months, helps to prevent many stock troubles. Moreover, on many farms production could be substantially increased by better feeding methods. The solution lies in the better provision of supplementary feed, especially for the winter.

### *Feeding and Disease*

Firstly, it is intended to consider feeding in its relation to disease. Vitality is an all-important factor where the prevention of disease is concerned. For instance, it can easily be realised that an animal underfed and exposed to the wet and cold of winter is not in a condition to put up a successful fight against the onslaught of disease. Because of insufficient feed the animal is forced to draw upon its reserves of vitality to sustain life. On top of this, in the case of a dairy cow especially, there is often a calf to nourish. Again, food is required to maintain body heat; therefore, the colder the weather the more the food required.

Another important factor to be remembered in the case of a dairy cow is that after her lactation period is over she needs the best care and attention in order to build her up for the coming season and to give her a chance to nourish properly the calf she may be carrying. Unfortunately, how often

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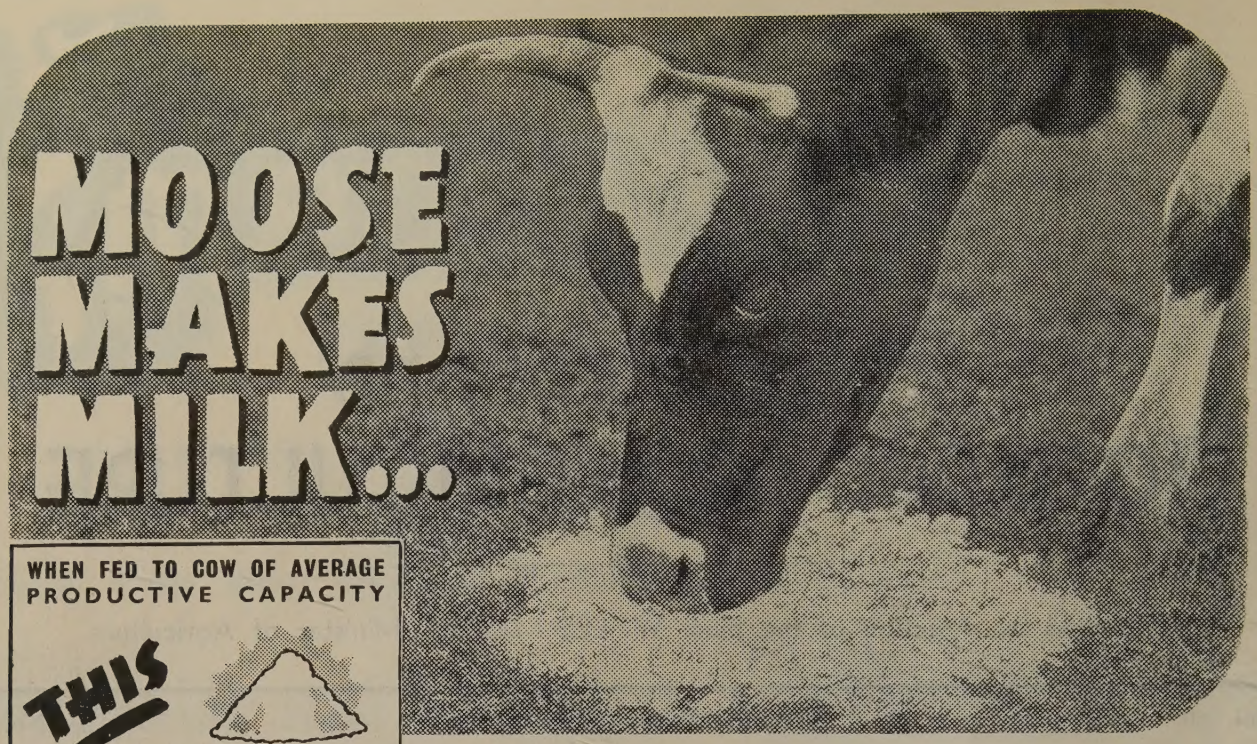

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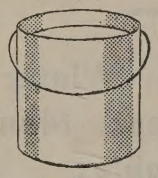

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# MOOSE

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is it otherwise? The cow is turned out when the season is over, and is given a little mouldy hay and often nothing at all but what she can pick from the bare paddocks. It is no wonder that our losses from disease are heavy.

### *Animal's Reserves*

When a plentiful supply of nourishing food is available the animal's reserves remain untouched, its body heat is maintained, it is well able to stand the wet and cold of winter, and, above all, is in a condition to have an excellent chance of withstanding the attack of disease.

It is not the intention of this article to discuss diseases, but research has shown that proper feeding, especially during the winter months, undoubtedly helps to prevent such troubles as milk fever, paralysis, and grass staggers. It is also considered that some kinds of sterility and non-contagious abortion may be caused by improper feeding. However, in all diseases the resistance of the subject of the attack is the governing factor as to whether it lives or dies, and it goes without saying that a well-fed animal has a better resistance than an underfed one.

The writer has taken particular notice of farms in the Wairoa district, and has found that on those where efficient winter feeding is practised the loss from disease is very low, but on those where poor feeding is done or where no feeding is done at all, loss from disease is much higher.

### *Butterfat Production*

The butterfat average of the farms of the Dominion is very low, somewhere about 240 lb. When it is considered that a cow producing under 250 lb. of butterfat in the season is regarded as an unprofitable proposition, it would appear that a large number of dairy herds are hardly paying their way. The main reason for this is not hard to find, and can be summed up with the word "Management," of which proper feeding plays the major part.

How can an animal, which has been subjected to semi-starvation and even starvation conditions during the winter months be expected to produce heavily during her lactation period? At least the first two or three months of that time are required to build up her lost condition, with the result that the "flush" is past before she is in a condition to milk well. A cow should come in to start the season in the best possible condition, so that she reaches her peak production as early as possible.

A little inquiry into the methods followed by those farmers who obtain high butterfat averages year after year will show that most of their success is due to the attention paid to their feeding programme. Rigid culling and good bulls play their part, but the highest butterfat backed bull in the world would be of little assistance on a farm where proper feeding was neglected.

### *Examples on Farms*

The writer has again taken notice of farms in the Wairoa district with high and low butterfat averages, and has found the above-mentioned observations to be amply borne out.

For instance, there is the case of Mr. T. H. Hall, of Matai, Wairoa, who for three seasons running topped the Wairoa district butterfat averages before going out of dairying. When Mr. Hall first started dairying his average was quite low, only a little supplementary feeding being done at this stage. He decided that more attention to his feeding methods would increase his milk production and, accordingly, his butterfat average.

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The first year proved this contention, for his average rose to 309 lb. He further improved his feeding methods, and the following season his average rose to 425 lb, the highest in the district. The number of cows kept was not increased in any way. Mr. Hall also asserts that his loss from disease was reduced to practically nothing by his improved feeding methods. Another farmer of this district, Mr. A. R. Young, of Paeroa, Wairoa, who topped the butterfat average for the district last year, also pays strict attention to feeding methods, resulting in yearly high averages and practical immunity from loss through disease.

### *Proper Feeding Pays*

It can be seen, therefore, that it pays to feed sufficiently and correctly, and it is safe to say that on the majority of farms where low butterfat averages are experienced, production could be substantially increased were better feeding methods instituted.

It should be stated here that it is essential that hay and ensilage should be of the best possible quality; mouldy hay and ensilage which has not been properly made can be harmful to stock, even to the extent of causing considerable loss. To obtain the best results and have cows coming in in really good order, crops such as carrots, pumpkins, and swedes should be grown, which, with good hay, are excellent feed.

### *Care of Young Stock*

Considerable loss is caused to the farming industry by the neglect of proper feeding methods for young stock. The first year of an animal's life is the most important, and the treatment it receives during that period determines its future value to the farmer. Especially is this so in the case of calves intended for future dairy herds.

Unfortunately, this factor is all too often neglected, and the result is a weakly animal and an easy prey to parasites, or, if it survives these, a stunted beast of little use from a butterfat production point of view and less so as a potential breeder of healthy, vigorous stock for future herds. It is also an animal that will more easily succumb should disease germs attack it.

It is most important that the calf gets its mother's milk for the first four or five days and whole-milk for at least a fortnight. The change to skim-milk should be gradual, and the loss of feed value caused by the skimming should be replaced by a supplementary feed, such as linseed meal or meat-meal. The latter should be increased in proportion to the increase of skim-milk. A little good-quality hay for the calves to pick at is also very beneficial.

Again, it is most important that the calves should be weaned on to good clean pasture to avoid as much as possible the risk of parasitic infection.

### *Feeding of Pigs*

What has been said earlier regarding feed applies also to pig-keeping. In the past the pig was looked on somewhat as a necessary evil, but today it is being more and more realised that this animal is probably the most profitable of all farm products. However, because of poor feeding methods, as well as poor housing and unsatisfactory surroundings, heavy losses are experienced which, for the greater part, could be avoided.

Skim-milk alone is not sufficient feed. It is unprofitable in that the pigs take longer to come to porker and bacon weights than if supplementary feeds are used. Also, pigs fed on skim-milk alone are not so likely to have the same resistance to disease as those fed on skim-milk plus grain, meals, or other foods.

In very few cases do crops seem to be grown for pigs, yet in this district especially, where maize and pumpkins grow so well, it is hard to understand why more cropping is not done.

### *Conclusion*

In conclusion, the lack of sufficient winter feed was drastically demonstrated in this district last year. On many farms large numbers of cattle died through absolute starvation. Many died from paralysis and other troubles which, for the greater part, could be traced to the poor feeding methods followed. A very large number also were in such poor condition that they were certainly not able to produce much during the season.

It would appear that advantage should be taken of good seasons to get in extra supplies of hay, for last year in this district this commodity was almost unprocurable and was at a price that would make the purchase of any large quantity beyond the means of many farmers.

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# Farming During The War Period

FOR the duration of the war all farmers are subject to the patriotic urge to increase production of the necessary and vital foodstuffs demanded by the Allies. This effort is, and will be, handicapped to some extent by lack of manual help and, at the very least, by less efficient labour offering. Consequently, the farmer's efforts must be directed towards reducing this handicap to a minimum, although, of necessity, efficient farm labour will become ever decreasing.

This shortage of labour may be minimised to some extent on many farms by the increasing use of machinery, and in this connection the tractor has already played a big part,

— By —
A. STUART,
Instructor in Agriculture,
Invercargill.

and will, before long, play a still bigger part. On the other hand, tractors have been acquired on many farms where the size of the farm really does not warrant the expenditure.

## *An Appeal*

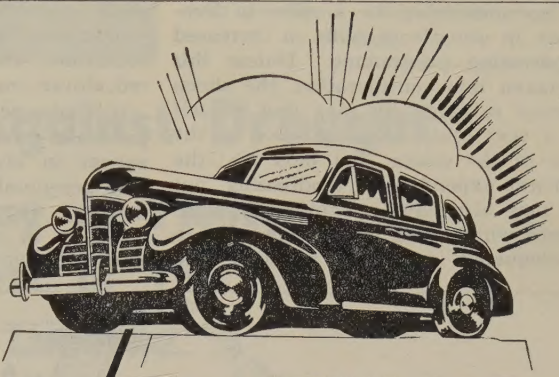
It is to this class of tractor-owner that an appeal is made to assist their neighbours in whatever contract work should be offering. In many cases two or more farmers could co-operate to advantage in the purchase of a tractor. Co-operation in the harvesting of crops has already reached a very high standard, and there is no reason why this valuable co-operation could not be extended in other directions.

## *Increasing Production*

As far as Southland is concerned, once the land has been adequately drained and is carrying a reasonable sward of grasses and clovers, the greatest increase would result from the increased use of lime and fertilisers. Production on many farms has been doubled and even quadrupled this last decade due to this one factor, but even on farms where this has occurred it will be found in many cases that the whole farm does not receive an annual topdressing.

The first necessity is to check up on your lime requirements. No province uses more lime than Southland, but at the same time no province requires it more, associated as it is—particularly on the coastal districts— with a relatively high uniform rainfall throughout the year and with a clay subsoil. Other things being equal, it is found as a general rule that dairy farms will require more lime than sheep farms, as evidently greater quantities are removed with the milk supplied to cheese factories than with lamb and wool.

Generally speaking, it will be found good farming practice to apply one ton of carbonate of lime when the land is broken up for swedes, and a second application of a similar quantity before sowing out to grass. This should be sufficient to carry on for four to five years unless the land is very deficient. At the end of this period light applications of lime to coincide with the an-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nual dressings of phosphate should be started.

### *Two Important Points*

Where grass mixtures are sown with a nurse crop, as is often the case on the coastal districts referred to, excellent results are achieved by the phosphate topdressing of the grass in its first autumn following the removal of the crop, that is, after harvesting in the case of a cereal, or after feeding-off in the case of rape or turnips. This topdressing frequently makes all the difference between an excellent pasture for the next ten years or an indifferent one throughout its life.

A second mistake too often made is in not increasing the number of livestock in accordance with an increased topdressing programme. Unless this is taken into consideration, the sheep farmer in particular may find himself in a very much worse position at the end of the season, not only by the amount expended on topdressing, but he may also have a liability of more lambs which have not fattened due to inadequately controlled pastures. The dairy farmer may be more fortunate, as adequate supplies of hay and ensilage are essential for the winter period, and extra quantities of these materials, if conserved, provide an excellent form of insurance.

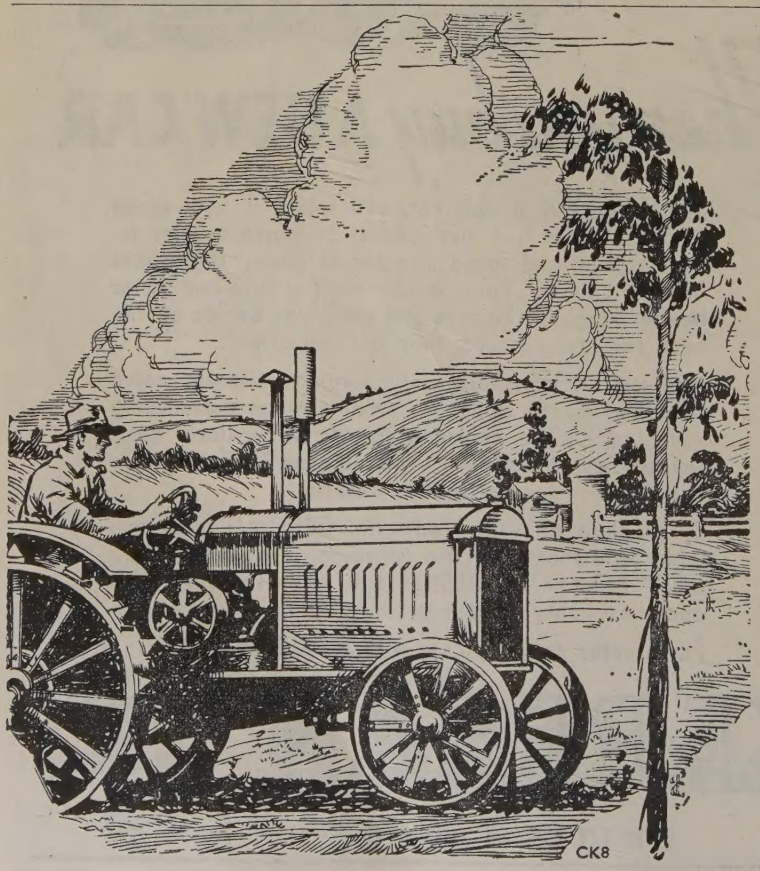
### *Take Advantage of Certification*

On a dairy farm of average size pastures do not remain down for a period greater than eight years, but on a fat lamb farm pastures remain down for at least double that period. Consequently, the cost of the seeds mixture can be spread over a period of from eight to twenty years, and this fact should be kept in the foreground. The farmer's main requirements in seeds can now be obtained as certified —perennial ryegrass, Italian ryegrass, cocksfoot, white clover, Montgomery red clover, and broad red clover.

It is false economy to sow a so-called perennial ryegrass which would disappear in eighteen months when a true perennial is obtainable at double the price. The same applies to imported cocksfoot in comparison with certified lines. Perhaps the greatest contrast of all is obtained when a poor strain of white clover is sown in the mixture as against a certified strain, and yet many farmers do not sow white clover, being content to wait for volunteer growth. This growth is, in most cases, of the annual type, and is late away in the spring. In some seasons it may be prolific in February, but the following year practically non-existent.

A good strain of white clover is indispensable, and is the nitrogen factory of the farm. It should be there at the beginning and remain throughout the life of the pasture, and the farmer should not have to wait at least two years for it to increase, for all this time production is being reduced by its absence.

If true perennials are sown the need for the inclusion of certified white clover becomes more imperative, as there is stronger competition from these perennial grasses. Without adequate clover representation in the sward, grass starves from lack of nitrogen and becomes unthrifty and unpalatable, and the grazing livestock suffer accordingly.

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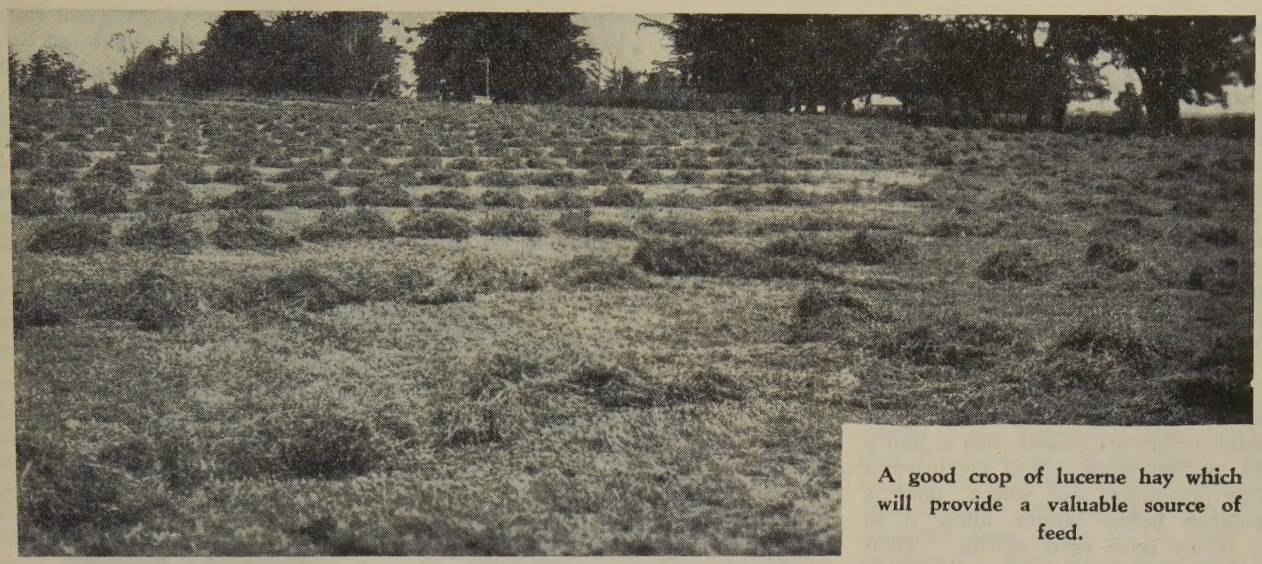

A good crop of lucerne hay which will provide a valuable source of feed.

# Useful Insurance Against Drought

## Dry Season in Bay of Plenty Revives Interest In The Growing of Lucerne

A. V. ALLO, Instructor in Agriculture, Tauranga.

THE 1938/39 season was a season of abnormally low rainfall and was remarkable for the lack of grass growth, so that it has been extremely difficult for farmers in the Bay ot Plenty to save sufficient supplies of hay and ensilage. With the lowered grass production, herds tended to dry off earlier than usual, and butterfat production was lower than normal.

Farmers who had a good stand of lucerne felt the pinch far less than those who relied solely on grassland to fulfil normal feed requirements. Consequently, a renewal of interest is now being shown in lucerne. Many inquiries have been received concerning the establishment of this plant, and it is safe to say that a number of farmers will be laying down new stands this coming summer.

In the following suggestions it is intended to offer assistance to farmers who will be sowing down areas of lucerne without previous experience of this crop. Firstly, it can be stated that it is not a difficult crop to establish. Provided certain elementary rules are followed, success is almost certain. There is no crop grown which so amply repays careful and thorough methods in preparing the soil and sowing the seed.

**Lucerne is one of the farmers' best insurances against drought, and, following the abnormally dry 1938/39 season, a renewed interest in this crop is being shown in the Bay of Plenty. The author has no doubt that it is possible to grow lucerne on most soils of the Bay of Plenty, and describes the best method to attain this end.**

Lucerne will grow successfully on a wide range of soils; in fact, it will thrive in any part of the Bay except on the drained peat swamps, where the water table is too near the surface. Of these swamps, paspalum, in conjunction with ryegrass and white clover, is a far better proposition. On the lighter pumice loams, however, with their friable and easily-penetrated subsoil, lucerne has a habitat in which it thrives.

### *Selection of Area*

Lucerne is a lover of sunshine. Therefore, try to select a field with a northerly aspect. As lucerne will not thrive if the water table is close to the surface, the soil should be well drained, with a free-working subsoil. If possible, choose an old grass paddock free from twitch.

Lucerne cannot compete with twitches, and it is essential to have as clean a field to begin with as possible. Weed competition also militates against successful establishment. All preparatory cultivation of the soil should aim at making the resultant seed bed as free as possible from weed seeds.

### *Cultivation*

Having selected a suitable paddock, the farmer should prepare the seed bed. Early ploughing is usually advisable and, if possible, should be done before winter. In cases where a poor pasture with little growth is to be worked up for lucerne, ploughing may be left until July, but no later. The later the ploughing is left, the more hurriedly must the seed bed be prepared, and the greater is the danger of weed competition.

It is too much of a gamble to attempt to sow lucerne in an imperfectly-prepared paddock, and many cases of poor establishment are directly due to faulty and hurried work. Roll the furrows after ploughing, and where land is ploughed before winter, allow it to lie fallow until early spring. Then work up with the discs and harrows in order to break down the turf. Once the turf is broken and the soil is free-working, all deep cultivation should cease.

The aim now is to make the top inch of soil as free as possible of weed seeds. Thus, subsequent cultivation is directed at germinating the surface weed seeds and then killing the young weed plants. This is accomplished by alternate harrowings and rollings. The rolling consolidates the top soil and encourages the weed seeds to germinate, while the harrows pull the young plants out of the ground, to be killed on the surface of the soil.

These operations should be continued right up to the time of sowing, when the surface soil should be comparatively free from weed seeds. It is obvious that continued deep working will merely bring fresh weed seeds to the surface of the soil, and this must be avoided at all costs. While we are on the subject of rolling, it might be mentioned that if a roller is unprocurable, frequent tramping by stock will assist to consolidate the soil.

### *Dealing with Twitch*

But, one might say, how about a twitchy paddock?

If it is impossible to select a paddock free from twitch for the lucerne all preliminary cultivation should aim at killing as much twitch as possible. Ploughing should be done as early as possible and the ground disced and harrowed to bring most of the twitch to the surface. If the roots are allowed to dry on the surface and are then collected and burnt, so much the better.

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After the ground has been thoroughly worked and as much twitch as possible killed, a crop such as oats should be sown in mid-autumn. This will help to smother any twitch left. These oats should be fed off in late winter, allowed to go to hay, and the land again ploughed the following autumn. A further green crop may be taken. This should be fed off as before, and the stubble ploughed in in September. In cases of bad twitch infestation it will take two years to clean up the land thoroughly before the lucerne is sown.

### *Methods of Sowing*

Lucerne seed may be sown either through the broadcaster or drilled. There are very few grain drills in the Bay, and lucerne seed is usually mixed with the manure and sown through the topdresser. This is quite satisfactory, and lucerne sown in this manner will establish quite well. It is advisable not to sow the seed too thickly, as this often leads to overcrowding, with weakly plants as a result. When the seed is drilled it may be sown at the rate of 14lb. per acre, and, when broadcast, at about 18lb. per acre.

It is utterly useless to attempt to increase the seeding with the object of smothering weeds. Measures should be taken to eliminate weeds before sowing, not after. It is quite a good plan, whether drilling or broadcasting lucerne, to sow half the seed one way and the remainder across the first sowing. Hand-sowing is quite satisfactory on small areas provided inexperienced sowers mix the seed with lime in order to obtain a more even distribution.

### *Seed Inoculation*

If one examines roots of any leguminous plant, small, white, wart-like growths can be seen on them. These are colonies of bacteria, which are capable of taking nitrogen from the air and changing it to a form which can be utilised by the plant. Lucerne, being a legume, will also be found to have these colonies of bacteria on the roots.

In sowing down a paddock of lucerne it is absolutely essential that these bacteria be present in the soil, for without them it is impossible for the lucerne plant to thrive. At one time soil used to be carted from an old lucerne paddock and spread out on the field where lucerne was to be sown. This method was costly and laborious, and there was a grave danger of introducing disease into the new stand.

Cultures of these bacteria are now prepared by the Department of Agriculture, and by using such culture a farmer can be assured of introducing sufficient bacteria into his paddock to supply all the requirements of the new stand.

The culture is cheap, and is very easy to apply. It is supplied in small bottles in the form of a jelly. The jelly is washed out of the bottle with fresh skim milk and strained through clean muslin. This milk is then mixed with the seed until all the seed is moistened. Very little skim milk is needed, as it is necessary only to moisten the seed and not to wet it.

The seed is then allowed to dry in a cool, shady place. When the seed is sown it must not be mixed with superphosphate alone, but is best sown with lime or a mixture of equal parts of

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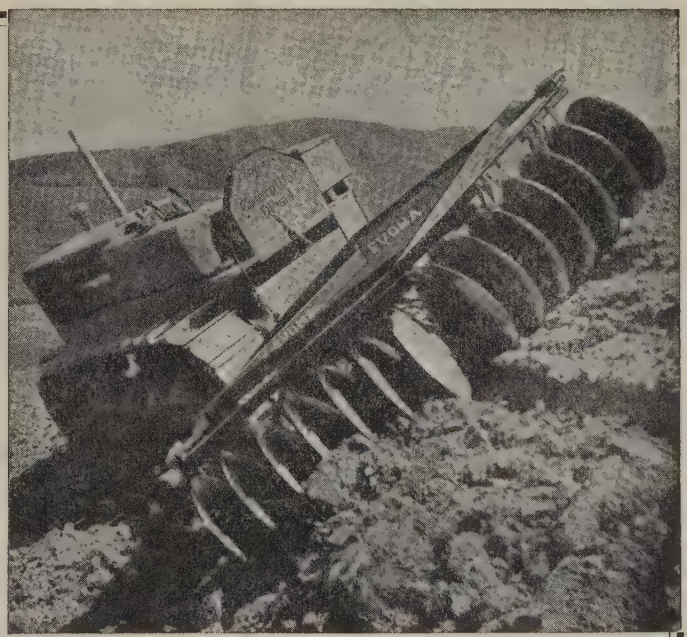


This photograph shows the "Giant" Disc at work on steep hillsides. It has brought in hundreds of acres of virgin land of all classes for its many users. The "Evona Giant" Disc has also proved remarkably effective on blackberry, scrub, ti-tree, tall-fescue, rank paspalum, fern, etc., doing up to 10 acres double cut virgin land in an 8-hour day. The "Evona Giant Chain" Harrow will clean up all rubbish, pull out loose timber, pull down any mounds, and fill up hollows. Work the two implements and you will have virgin land brought into a seed bed of fine even tilth. Note the deep cut when set is applied.

lime and superphosphate. If superphosphate is used by itself it will kill the culture on the inoculated seed, and will also adversely affect the germination of the seed.

### *Manuring*

Lime is essential to correct soil acidity. Lucerne will not thrive in an acid soil. It is sound practice to apply carbonate of lime to the soil at the rate of one ton per acre. This should be done at the beginning of November.

Two or three days before the seed is sown superphosphate at the rate of four hundredweight to the acre should be applied. As previously mentioned, superphosphate must on no account be allowed to come in direct contact with the seed. When sowing the seed it is best to use a mixture of equal parts of lime and superphosphate, or straight carbonate of lime, at three to four hundredweight per acre.

### *Time of Sowing*

Lucerne should be sown in the early summer.

The actual date of sowing should be determined by the length of time required to prepare the seed bed thoroughly. If sowing is done too early the lucerne may be smothered by weed growth. If the preparation of the seed bed has been done early and well, lucerne should be sown from mid-November on, but delay the sowing until December rather than risk sowing on a hurriedly-prepared seed bed. If sowing has to be delayed until December the ground must be particularly well consolidated before sowing.

Always sow on a rolled surface lightly harrowed, and give a final rolling.

Sow, if possible, on a moist seed bed, or before a shower of rain.

It is definitely not advisable to sow in autumn because of the risk of frost damage. Although success is sometimes obtained with autumn sowings, they mostly result in heavy plant mortality, and the crop has often to be resown in the spring.

### *Cutting the Lucerne*

It is advisable not to cut the lucerne until it is properly ready. Often a farmer will see annual weeds coming up with his lucerne, and will be afraid that the weeds may smother the crop. Provided the lucerne appears to be holding its own and is still growing, it should not be cut until ready. Premature cutting tends to weaken the lucerne plants and to check them more than it does the weeds.

However, in cases where it is obvious that the weed growth will smother out the lucerne, it may be essential to cut early in order to save the stand. If this is so, the mower knife should be set as high as possible, while the cut material should be raked up at once and carted off the paddock.

Try to avoid this early cutting, however, if at all possible, and use the mower only as a last resort.

Now, one will ask, what is the proper time to cut lucerne?

It used to be claimed that the correct time was when one-fifth of the crop was in flower. This is far too late. Lucerne should be cut when the new shoots appearing at the crown are about half an inch long. If those shoots are allowed to grow until one-fifth of the crop is in flower they will be nipped off by the mower, and regrowth will be at a standstill until new shoots appear. Also, if the lucerne is cut too late the quality of the hay will be poorer because of increased woodiness of the stems. If the lucerne is cut before the new shoots appear at the crown the yield of material from the cut will be lower than it should be.

In view of the fact that the first spring growth usually contains much weed it is usual to make the first cut of lucerne into ensilage. Later cuts are usually made into hay, although the last cut of the season may be made into ensilage, as some difficulty may be experienced in drying out the crop for hay.

### *Cultivation of the Stand*

The management of a field of lucerne depends on ruling conditions. A hard-and-fast rule for the management of

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lucerne cannot be laid down, but, broadly speaking, heavy cultivation is unnecessary in the Bay. It is quite common to cultivate a field in late winter or early spring after a dressing of superphosphate has been applied. This may be quite suitable to help kill out annual weeds, but if twitch is present heavy cultivation will merely assist the twitch to spread.

Harrowing, in such circumstances, should not be done until January, when the hot sun may check the twitch.

If a stand of lucerne is diseased heavy cultivation will merely help to spread the disease. Such a field should therefore not be cultivated.

When a stand of lucerne is vigorous and is relatively free from annual weeds and twitch it is not necessary to resort to heavy harrowings or other forms of severe cultivation. A liberal dressing of superphosphate, say, five or six hundredweight per acre every August, will do more to maintain the stand in a vigorous and high-producing condition than any other treatment.

### *Grazing Lucerne*

The grazing of lucerne should not be practised.

Many a splendid stand of lucerne has been ruined through injudicious grazing, while the danger of bloating in the stock must not be discounted. Trampling by stock during grazing will consolidate the surface of the soil, and once the surface is consolidated grass invasion will begin. Once lucerne is invaded by grass there will be a marked reduction in the lucerne population and production. A stand of lucerne is too valuable an asset to risk losing; therefore, avoid grazing at all costs.

### *Conclusion*

In conclusion, it can be stated definitely that it is possible, with a little care and attention, to grow lucerne on most soils of the Bay of Plenty. It will grow there with just as much success as it does in most other districts in New Zealand.

As a means of supplementing the normal grassland production of the dairy farmer, and as a valuable source of green feed (to be cut and carted out to stock) during a dry spell, it is unsurpassed. It is a crop which will repay the farmer well for all the care he gives it, and it is his best insurance against drought.

YOU WON'T HAVE RHEUMATISM

Rheumatism is due to a blood condition. If you have a tendency to acidity you are liable to it. There is a simple prescription for this. Acids accumulate in the blood when the liver is lazy and the kidneys sluggish. To tonic the liver and make the kidneys active there is nothing better than Kruschen Salts. As the analysis on the bottle shows, this is not a patent medicine or a secret remedy. It is a combination of six natural salts. Doctors have been familiar for years with the action of these salts, have been prescribing them for years. They stimulate the liver and kidneys. Acid in the blood is dissolved, washed out. A pinch of Kruschen every morning in hot water or tea is a preventive. Sufficient to keep many people free from rheumatism. A half or full teaspoonful is advised in obstinate cases.

YOU'LL FEEL ALL THE BETTER FOR A PINCH OF

KRUSCHEN

*Take Kruschen in tea or hot water. 2/4 a bottle at Chemists and Stores.*

KA-71

## Cream Cooling System

Contributed by the DAIRY DIVISION.

A SUPPLIER to the dairy factory at Whakapara, North Auckland, has installed a cream cooling system which may be of interest to dairy farmers. The details are as follows:—

The milk is separated in the usual manner, and after separation the cream is put into a small vat of about 18 gallons capacity. From there it is gravitated over a large size cooler consisting of eight one-inch tubes 2ft long. Ordinary spring water is run through the first four tubes, and brine circulated through the last four. The brine is obtained from a container on top of a large size refrigerator, which is housed in the separator room, the temperature of brine being well below freezing point.

The writer recently visited this shed during milking for the purpose of watching the cooling of the cream. The day was an average summer day as regards atmospheric temperature. The cream was delivered from the separator to the cooling vat at a temperature of 84 degrees Fahrenheit. On leaving the cooler the temperature of the cream was 63 degrees. The cream is kept in the refrigerator (which is large enough to hold two 12-gallon cans) which has a maintained temperature of 40 degrees Fahrenheit. On delivery to the cream cart the temperature of the cream was about 60 degrees Fahrenheit.

This farmer milks 125 cows, and, although the initial cost of his cooling plant is fairly high, he is confident it will pay for itself by improved quality. To date, he has had all finest grade with the exception of two cans of first-grade.

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CAMEOSA

WILL WASH OUT COWS SAFELY!

CAMEOSA IS SOLD EVERYWHERE

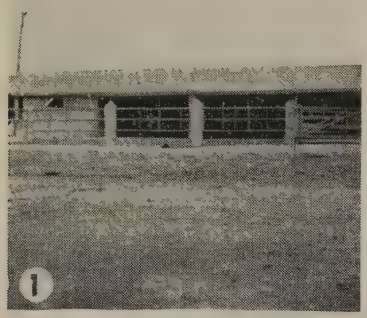
# *Here's An Idea!*

## Practical Hints for the Dairy Farmer

By G. A. BLAKE, Fields Instructor, New Plymouth.

WITH so much of the dairy farmer's time taken up in and around the milking shed, the provision of a well-equipped shed and yards (Fig.1) considerably reduces the milking time and adds to the comfort of the milkers. Without the provision, however, of a well-balanced pasture, (Fig.2) sufficiently topdressed and harrowed and rotationally grazed, the animals are unable to return high yields.

The importance of good shelter (Fig. 3) cannot be too heavily stressed, both for its effect on the stock and the paddocks. Well-sheltered fields are protected from drying winds, and do not become parched so early in the summer as less-protected areas. Similarly, sheltered pastures make earlier growth in the early spring, thus decreasing the amount of hand-feeding necessary. Lawsoniania, boxthorn and barberry are useful varieties for subdivision fences, although Lawsoniania has the drawback of requiring double fencing. Macrocarpa, as illustrated, tends to grow away from the ground, thus causing draughts, and because of its size is better employed in conjunction with one of the above as a windbreak on the windward side of the farm.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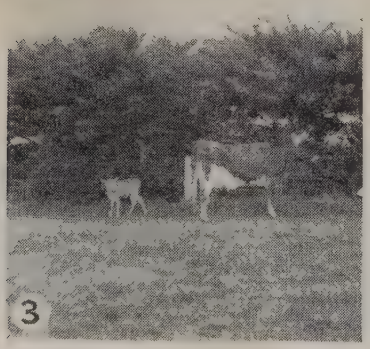
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Although natural running water has much to commend it, contamination from areas higher up the stream must not be overlooked. To obviate this, large troughs placed in the fence-line (Fig. 4) give easy access for the stock and prevent loss of production. When it is remembered that 87 per cent. of milk is water, the necessity of a good supply is easily recognised.

Fig. 5 illustrates one of the most common losses on a dairy farm. The refuse collected from the shed and yards has a high manurial value, but, when left in a heap exposed to the weather, much of the plant food is lost. To conserve this food and gain the greatest value from it, every effort should be made to collect the droppings and distribute them over the farm in the form of liquid manure (Fig. 6). On an average, the shed cleanings from three cows is sufficient to topdress one acre of land per year; hence, its value is easily computed.

Pigs form a highly remunerative sideline to dairying, and now that the Homeland requires increased quantities of bacon, the utilisation of our dairy by-products through the pig deserves attention.

The first essential is a good layout (Fig. 7), complete with loading race,

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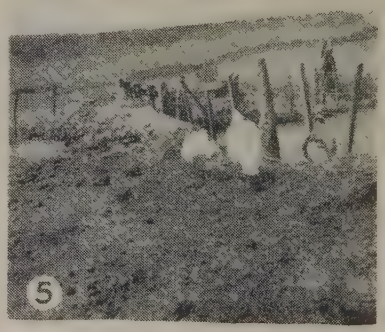
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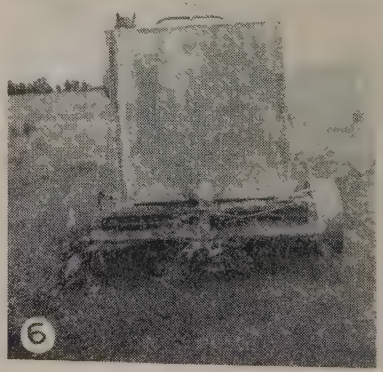
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ringing or detusking pen, and drafting yard. Too often do we see a good layout ruined by the runs being too small, which, in wet weather, results in a quagmire totally devoid of grass for grazing (Fig. 8). Under these conditions poor utilisation of the food results in loss of revenue and a decreased output of pig flesh. The spread of disease is also accelerated, and in many instances this has caused farmers to give up pig-keeping, preferring either to give away or pour down the drain the skim-milk not required for calves. Under good management skim-milk may easily be worth one penny a gallon.

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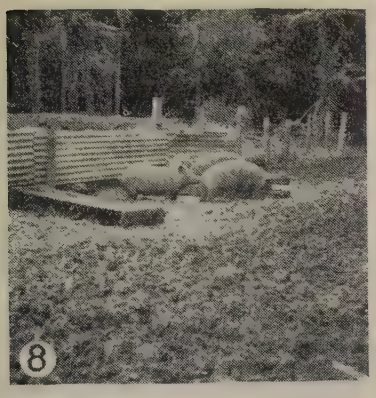
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Each run should be equipped with a draught-proof house (Fig.9) fitted with a board floor. (Note the battens over the join between the boards.) In damp or very hot climates it is advisable to place a felt or wooden sarking under the iron roof. Draughts in the sleeping quarters cause many ailments, with subsequent loss in decreased returns.

Fig. 10 illustrates a draughty type of house, the use of which is strongly condemned. Unless the body temperature of the pig remains practically constant both day and night too much of the food consumed is required for maintenance, and this is reflected in the animal taking longer to reach the desired weight.

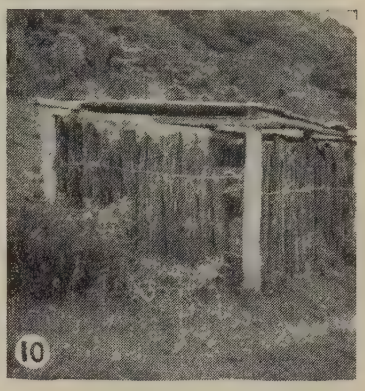
Cleanliness is absolutely essential to the successful rearing of young pigs. When conditions are similar to those illustrated in Fig. 11 the suckers are called on to resist the effects of harmful germs or bacteria, and in many cases, as they are unable to do so, a high mortality rate exists.

Another cause of unthriftiness is the collection of a large number of pigs of different ages and sizes in one run (Fig. 12).

Unless ample troughs and food are available fighting occurs, and the wounds thus caused often lead to abscesses, resulting in the condemnation of that part of the carcass. The smaller animals are more or less starved and more liable to contract ailments. Overcrowding in the houses also occurs, resulting in smothering, while the liability to chills is increased.

Pig farmers would be well advised to obtain the Department's Bulletin 177, "Layout and Construction of Modern Piggeries," price 2/- per copy, or 1/- if ordered in bulk supplies of not less than 20 copies through a dairy factory.

**All photographs, with the exception of Fig. 2, are by the author.**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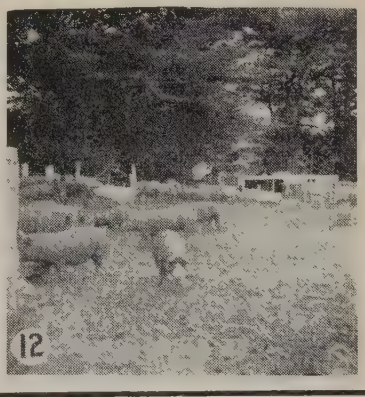
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# *Pigs*

# Keep Those Winter Litters Warm

H. M. PIERSON, Extension Officer in Pig Husbandry, Wellington.

IN the cold weather it is not easy to keep young pigs "doing" steadily, not altogether because of the short rations, but mainly because of lack of warmth. Many types of housing give a varying degree of efficiency, and it is difficult to show that any one particular type is more successfully used than another.

Pigs conform closely to human beings in their physical characteristics and requirements. It is logical, therefore,

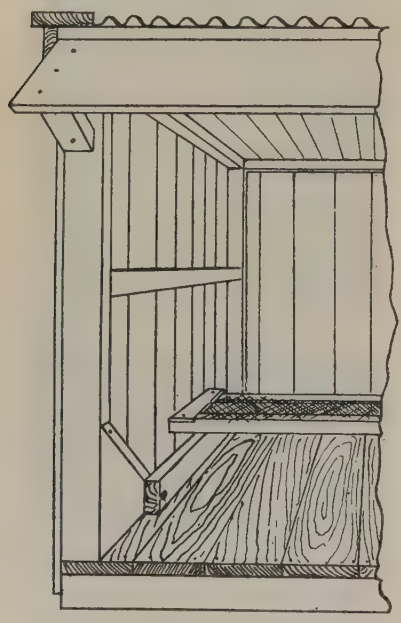

Fig. 1.—Showing how the frame fits at the back of the farrowing house.

to assume that it is possible without serious difficulty or expense to apply to pig farrowing houses certain methods which have proved comforting to ourselves, namely, some form of heating without having to provide artificial heat.

A unique idea was seen on a farm during a recent visit to the Northlands District Pig Council. This idea was described by the farmer as a "winter litter-saver."

It consists of a frame made to fit at the back of the farrowing house. (Diagram 1.) Each end of the frame rests on the farrowing rail and extends 18 inches, making a recess 12 inches high with depth and length enough to accommodate the largest litter.

The roof or frame of this recess is constructed with 4 in. x 1 in. timber, and the front edge with 3 in. x 2 in. timber, over which is drawn wire-netting. (Diagram 2.) This frame is covered with straw or hay to form a blanket, and the recess beneath is also filled with straw or hay, making a very cosy draught-free corner for the piglets. If timber is not available wire-netting or sacking stretched across the corner of the house would probably prove effective.

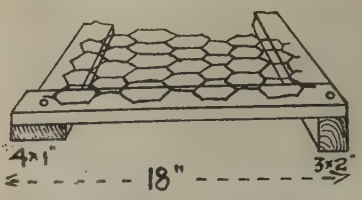


Fig. 2.—Showing how the frame is constructed.

The usual conditions under which pigs are kept in winter result in a large proportion of the food eaten being used to make up loss of body heat instead of contributing to weight increase.

"KEEP THEM WARM." This is of vital importance in stimulating healthy growth and preventing scours and anaemia.

The Basis of Profitable Pig-keeping is ADEQUATE HOUSING

*Before you build, read—*

**"Layout and Construction of Modern Piggeries"**

It will save you time and money.

PRICE: 2/- per copy.

Send remittances to PUBLISHER, Department of Agriculture, Private Bag, Wellington.

Or 1/- per copy when 20 or more suppliers order through their Dairy Company.

A view of the farm and layout.

# Mass Production of Pigs

## Farm Which Has Output Of 2,000 Pigs Per Year

— By W. T. BROWN, —
Fields Instructor, Taumarunui.

REMARKABLE increases have occurred in our exports of pig meat in recent years. These increases are outstanding, and it is doubtful whether any other primary industry has ever shown such a meteoric rise from an insignificant industry which, in the year 1923-24 exported 4943 pig carcasses, to an industry of great national importance which in 1937 exported 680,496 carcasses.

The New Zealand Agricultural and Pastoral Statistics show that in 1924 there were 414,271 pigs produced in the Dominion. In 1937 this total had increased to 1,120,905, an increase of 706,734 pigs in thirteen years.

These figures show that the pig industry today takes its place as one of the foremost primary industries of the country. This position has been brought about by several factors—pig-recording clubs and co-operative marketing, and by large breeding farms which have been run in conjunction with many of our dairy companies.

Although buttermilk represents at most only 6 per cent. of the total dairy by-product, those who use it exert a considerable influence on the type and quality of the pig-meat output. It is estimated that 80 to 100 thousand baconers out of 440 thousand killed annually pass through buttermilk producers' hands. This large number goes through because usually these pigs are finished off only. If buttermilk producers bred their own pigs they could probably turn out two-thirds as many as now, and convert buttermilk into nearly twice as much pig-meat as they now do. Because the New Zealand Co-operative Dairy Company's factory at Te Awamutu does breed most of its own pigs it is worth while describing its equipment and practice in detail.

**Pigs are seldom deemed of sufficient importance to warrant the outlay of capital for their production. This article gives a brief outline of a splendidly equipped pig farm where capital has been judiciously spent and organised effort is seen to advantage. These pigs pay unquestioned dividends.**

### *The Punga Maru Stud*

The New Zealand Co-operative Dairy Company's pig farm of 75 acres is situated in a well-sheltered and well-drained valley in a bend of the Mangapiko stream one mile from the company's factory at Te Awamutu.

This farm was originally started for the dual purpose of utilising large quantities of buttermilk from the factory and supplying farmers with good-quality breeding sows at reasonable prices.

### *Layout*

In this large piggery the lay-out has been well planned. A large barn, in which all concentrates are stored and all foodstuffs mixed, is situated in the centre of the farm. Buttermilk is pumped from the factory, one mile distant, into four 2300-gallon tanks raised on high trestles. From the tanks the milk is reticulated by gravity through 2½ miles of 2in pipe to every pen on the farm. This method of distributing liquid food is a great labour-saver, and could well be copied by many farmers running pigs on a smaller scale.

When this method of distributing the buttermilk was first tried much curd

formed on the inside of the pipes. This would soon have caused a blockage and have rendered the system useless, but it was found that if a mixture of one part of molasses to one hundred parts of water were run through the pipes every day all curd was removed and no trouble was experienced from this source.

The farm is laid out more or less in a circle with the paddocks on either side of central races. These races all radiate from the centre of the farm, making feeding very handy.

## *Stock*

There are 180 breeding sows carried on the farm, and the four pure breeds are represented by 20 Devon, 15 Berkshire, 13 Tamworth, and 12 Large White sows and four boars of each breed. These, together with 120 crossbred sows, comprise the breeding stock of the farm.

An unusual type of breeding—the crossing of crossbred sows to boars of another breed not in the original cross—is often carried out on this farm. This type of breeding is often condemned, but Mr. H. J. Webber, the manager, is strongly of the opinion that if the parent stock of the three breeds in the progeny are all of known ability and are carefully selected before crossing, no harm is done, and

*Left.*—The dip. Note the tipping pen and the waste oil floating on the surface.

*Right.*—The weigh bridge. Note how platform is arranged so pigs can walk on and off the bridge.

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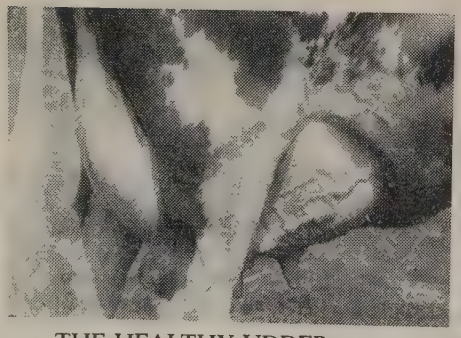
*(Registered pursuant to the Stock Remedies Act, 1934).*

**NEW ZEALAND EXPECTS every Cow to do its DUTY**

DISEASE is the Largest Contributory Factor to DECREASED PRODUCTION

**MAMMITIS PLAYS HAVOC**



THE HEALTHY UDDER ——— and ——— the HEALTHY HERD are the basis *of profitable farming.*

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*Extracts from Testimonials:—*

June 2nd, 1937.—"I milk 90 cows and it speaks well for your Drenches that I have not had to sell any for udder troubles. The season before this, I had to sell ten but at present I am sure every cow I have is sound in every quarter."—Signed "P.L.O'R."

October 15th, 1936.—"In my opinion your preparation could save thousands of cows in New Zealand annually".—Signed, "L.E.H."

March 9th, 1937.—"Having used your drenches all this season and drenched 20 cows out of a herd of 44, I am pleased to inform you that I have not lost a cow with Mammitis since I started using your Drench.—Signed, "J.H.B."

PRICE 25/- per packet, 12 dozen doses.

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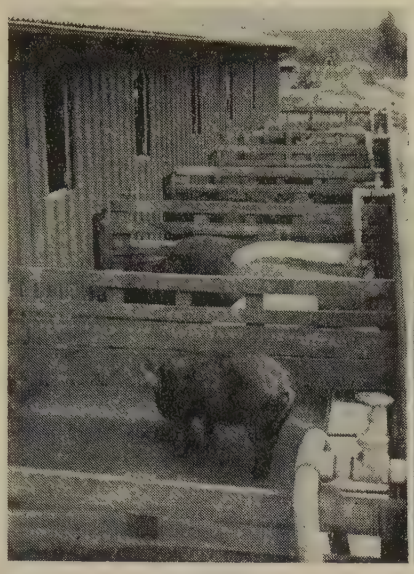
the progeny of this three-breed-cross are of good type and are thrifty pigs. However, it is imperative that further breeding from pigs of this breed should not be carried out, as it is improbable that good pigs will result.

To prove the ability of these out-crossed cross-bred pigs examples of their performances are given:—Show prizes—Bacon classes: 1st place at Auckland, Putaruru, and Stratford Shows; 2nd place at Hamilton and Cambridge Shows. The winning pig at Auckland was 22 weeks old and weighed 200lb liveweight and 147lb dressed. Pork classes: 1st prize at Hawera and Putaruru Shows; 2nd prize at Auckland Show. The pig exhibited at Putaruru was 13 weeks 2 days old and dressed 73lb. Last year a litter of ten pigs won the Fletcher Contest. These pigs averaged 78lb liveweight in 12 weeks and 2 days, and never had more than half a pound of meal per day.

## *Equipment*

As with other types of farming, certain equipment is necessary for the economic working of stock. Sheep farmers require a woolshed, yard, dip, etc., and dairy farmers, a milking shed, machines, cans, etc. The pig farmer has also evolved special equipment designed for the more efficient handling of his pigs.

On this farm, alongside the building in the centre, are yards for drafting and handling pigs, a weigh bridge, a dip, and a block of fattening pens.



*Left.*—The fattening pens, showing the outside feeding pens with buttermilk piped into each trough, and also water taps along the wall of the house. *Right.*—Good type of farrowing pen.

The weigh bridges and yards are features of all modern piggeries. This equipment may appear to be unnecessary, but it is only by regular weighing that a man knows exactly what he is doing—whether the pigs are thriving as they should—and, further, it is the best indication of results of any particular method of feeding.

## *Value of Weighing*

Weighing pigs at three weeks will check the capacity of the sow; weighing at eight and sixteen weeks will provide the necessary check on feeding and management, and will soon enable a farmer to eliminate any sows which are not giving rapidly maturing pigs.

The dip is useful for keeping pigs free from vermin and skin infections. It also serves a very useful purpose when different mobs of pigs have to

Shelter from sun and rain is provided in every field.

*Take "Time" out of*
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Thousands of Dairyfarmers throughout the Dominion are praising MILKEEZE—the ideal preparation for sore, wounded teats, and cracked, swollen udders.
MILKEEZE keeps teats soft and supple. Positively does not taint the milk. *From all Chemists and Stores.*
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be mixed. It is well known that a fair amount of fighting takes place when strange pigs are put in the same pen, but it has been found that if all the pigs are run through a dip which has 2in to 3in of waste oil floating on the surface little trouble is experienced, as all the pigs in the mixed mob smell and look the same, and vicious pigs are unable to distinguish strangers.

The fattening pens are the final and most important piece of equipment. These are used only in the final stage for finishing off bacon pigs. These pens are very well designed, have concrete floors and walls, and the back portion of the floors are boarded to give the pigs a warmer bed. Buttermilk is piped to each pen, and the pens are all under one roof, making very cosy quarters.

### *Management*

As with any business—and pig-keeping is a business—there must be a definite plan of operations, and this plan must be followed.

**The tanks from which the butter milk is distributed.**

On this farm the pigs have been divided into three sections, each under the control of one man. The first man is in charge of the sows from the time they come into the farrowing pens until the piglets are weaned. In these breeding pens, situated at the back of the farm, the pasture consists chiefly of large clumps of cocksfoot up to 2ft high. This gives the sows a picking of green feed, and also provides excellent shelter for the young pigs.

When the young pigs are about three weeks old, creep feeders are introduced and the concentrates gradually increased. At about eight weeks, or when they have attained 40lb, the young pigs are weaned and shifted forward into the next set of pens.

On entering this intermediate stage the pigs come under control of the second man. In these pens a certain amount of selection is made. Pigs suitable for pork are fattened, and the rest are raised until they reach store bacon weights.

Finally, the pigs are brought forward to the front pens. Here they come under the supervision of the third man,

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who is also the manager of the piggery. When the pigs reach this stage a very thorough inspection is made, and those suitable for breeding are selected. Others which do not reach the desired standard, and all barrows, are put into the fattening pens and finished off on buttermilk and concentrates.

The young sows selected for breeding are carefully mated and held for sale to farmers, or, if possessing exceptional quality and breed, are retained for the farm stud.

This scheme of dividing the piggery into three sections and placing a man in charge of each section is excellent and the good-humoured rivalry as to who will lose the least pigs and whose section is most profitable makes for excellent results over the whole farm.

### *General Considerations*

The quick rise to fame of the pig from a scavenger to one of the most economical converters of waste products into a marketable commodity has been a feature of how modern methods of management and feeding have increased New Zealand production.

First-class bacon pigs are produced from four breeds—Tamworth, Berkshire, Large White, and Devon—or by crossing selected members of these breeds, and so long as the restriction on the import of new blood is maintained, improvement in the type of our export carcass will have to come from within the country.

### *English Requirements*

The requirements of the English market compelled the Danes to produce pigs suitable to the market; therefore, we also must conform to requirements and export a good, even line of bacon.

Pig recording clubs in the Waikato, Taranaki, and Manawatu have given us a sound lead and have proved the success of the 40lb weaner, which was questioned by sceptics a few years ago, and also the advantages gained by producing two good litters a year at the optimum period in preference to the production of litters one after another.

Following this lead and the example set by various breeding establishments, it should not be unreasonable, with good pig layouts and with our equable New Zealand climate, to which the open range or paddock system is so ideally suited, to continue to expand our export of pig meat far beyond our present figures.


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Make your winter evenings profitable! It's easy! Look at the first word of the message "XGCKBI". By referring to the key letters given in the code you will see that X=G G=E, C=R, and so on. The key letters enable you to make the word GER—AN. Only one letter of this word is missing. If you know what it is, you not only have the first word of the message, but will also be able to fill in another letter in the code. Deal with each word in the same way and you will be well on the way to win the £25 cash prize.

## The CODE

B = A
= B
Q = C
= D
G = E
= F
X = G
= H
= I
= J
= K
= L
= M
I = N
P = O
= P
= Q
C = R
= S
= T
= U
= V
= W
= X
= Y
= Z

## WHAT YOU HAVE TO DO!

The object of this competition is to advertise the Lamphouse. It offers you splendid amusement and opportunity to win the Bombagram £25 Cash Prize.

All you have to do is to decode and translate the message given below. The message consists of two parts, the first a report of incidents in the present war, and the other an advertising message from the Lamphouse.

The code has been worked out on a definite system. Discover the system and you have the answer. There is only one CORRECT solution

Write the decoded message in ink on plain paper, underneath this write the alphabet and as many of the code letters you are able to find, then sign your name and address and post, with your entrance fee, to—

BOMBAGRAM COMPETITION No. 3 (J).
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## READ THE RULES CAREFULLY

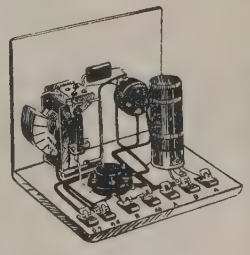
The £25 Cash Prize will be awarded to the competitor who sends in the message correctly translated, or to the one with the nearest to the correct translation. In the event of more than one competitor having the message correct, the prize will be awarded to the one who has the most letters of the code correct. In the case of ties, the prize money will be divided.

The decision of the judges (the Directors of the Electric Lamphouse Ltd.) will be final and legally binding throughout. A postal note for 1/- or 1/2 in stamps must accompany each entry. Any number of entries may be made, provided each is different and accompanied by a separate entrance fee. Alternatives in single entries will be disqualified. Post Office addresses not accepted. Entries from the staff of the Electric Lamphouse Ltd. will not be accepted. All entries must be postmarked not later than Thursday, June 20.

## THE MESSAGE (Bombagram No. 3)

XGCKBI OPKOGC QCBFNGE BA QHBQAPI QPIQMFFRPI HRVAGE NPMFGF VPPA VCPK ANGRC VPMIEBARPIF G KBQLRIAPFN PV IXBCMBDBNRB FGIA HRFA PV VRVAGGI BMFACBHRBI FABARPIF HPXXGE PI NRLGCF PIG

The result will be published in the issue of this paper dated August.



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Advertisement of **The Electric Lamphouse Ltd.** 11 MANNERS STREET, WELLINGTON

*Fig. 1.*—A heavy, new *lotus major* crop heaped in cocks preparatory to transport to the mill for threshing.

# Value Of Lotus Species In Reclamation Of Poor, Clay Soils

By J. E. BELL,
Instructor in Agriculture, Auckland.

Pioneers of the grasslands in the Auckland Province, the Lotus species of clover still play a part in the production of food for stock. Especially are they a valuable ally in the reclamation of poor, clay soils.

WHEREVER you go in the Auckland Province you will find a part played by one or more of the *lotus* species in the production of food for stock. Whether on swamps or on hard, dry hills, there is a place for one of these *lotus* species.

These clovers have been the pioneers of our grasslands in the Auckland Province, especially on soils which are grassed with difficulty. They have no place where the soil is kindly and responds easily to treatment, but where conditions are severe, where the soil is dry, hard, or poorly drained, there one or other of these hardy clovers will contribute its quota. In such conditions a legume which will exist is most valuable.

## *Valuable Ally*

When the pioneers of the Auckland Province turned their attention to the farming of the rolling gumland soils of North Auckland—notorious for their poverty—they found a valuable ally in *lotus hispidus* (miscalled *lotus angustissimus*). This clover established readily on well-drained areas from seed sown on cultivated ground and after scrub burns. It existed on these soils, lacking as they are in humus, lime, and phosphate. It gave a little fodder, which was much valued, because no other clover lived in such conditions; but if phosphate were supplied it would spring to life in an amazing fashion and produce a fair amount of spring growth.

The plant begins to set seed in December, when the hairs on its stems and leaves develop to a considerable extent, so that the vegetation becomes unpalatable, perhaps Nature's method of ensuring the setting of much seed and the greater chance of survival of the clover. Before this period it is quite well liked by stock. After setting seed the plant dies.

Much of the gumland was sown with *lotus hispidus*, which enabled the grazing of a few head of healthy stock where previously the pasture production was negligible and unsuitable because of the lack of clover. The clover made very little winter growth, but it produced an appreciable amount of spring feed, especially when top-dressed with phosphate. After a time, when the value of phosphate and lime for gumland was appreciated more fully by the farmer, better clover species than *lotus hispidus* became established, resulting in a much larger and more sustained production of better feed.

## *Still Useful*

Yet, to-day, *lotus hispidus* still plays its part. You will find it on almost any field on the gumland soils. Where the field is highly farmed and contains high-producing, well-maintained species, then *lotus hispidus* will not be seen, but wherever pastures are not up to this standard there will be,

according to the degree of fertility, less or more of this clover.

Plough a field even of highly productive pasture and *lotus hispidus* will usually appear if given a chance to establish from the seed lying dormant in the ground. Plough the field and sow a crop, and *lotus hispidus* will compete with it strongly, for it likes cultivated conditions. Subterranean clover has a similar trait, and frequently I have seen it growing strongly alongside *lotus hispidus* in a crop of swedes in May. After the swedes are fed out the cows can be turned in to feed off the *lotus hispidus* and subterranean clover.

I do not think that the clover affects the yield of the swedes a great deal, because their competition is greatest when the swedes are reaching maturity, and they may actually help the crop by providing the much-needed nitrogen for it. Loose soil conditions are favoured by *lotus hispidus* and if it is sown on cultivated ground it produces a high yield in the first season, even in the first winter.

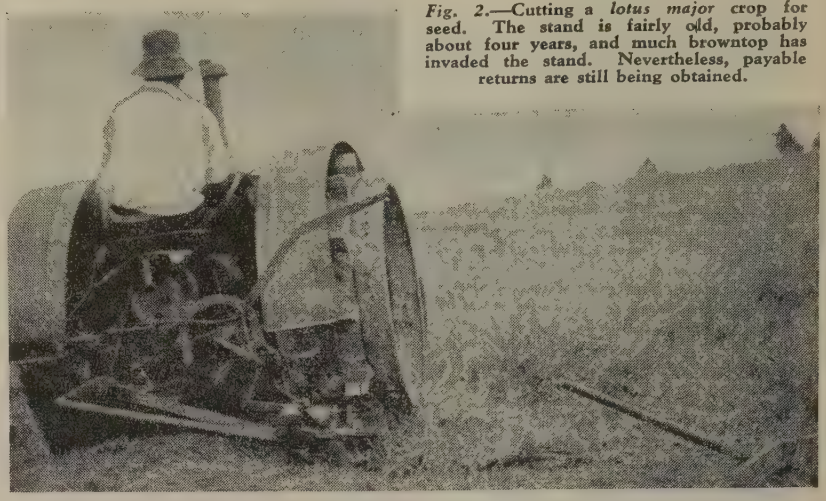

*Fig. 2.*—Cutting a *lotus major* crop for seed. The stand is fairly old, probably about four years, and much browntop has invaded the stand. Nevertheless, payable returns are still being obtained.

After the first season the ground becomes hard, and under such conditions the clover is not vigorous and soon succumbs to other clovers encouraged by lime and fertiliser. Under these hard soil conditions, trefoil, *lotus major*, subterranean clover and white clover take its place.

### *In Orchards*

In its liking for loose soil *lotus hispidus* has found with *lotus angustissimus* an ideal habitat in orchards established on gumland, where it has played an important part in the production of green manure in the culti-

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vated spaces between the trees. The fertiliser and lime applied for the trees has been utilised by these clovers, thus adding to the humus in the soil and increasing the fruit production. Under bare fallow conditions it is doubtful whether the fruit production would have increased as rapidly as it has, aided by the growth of *lotus hispidus* and *lotus angustissimus*.

A tribute must be paid to the part *lotus hispidus* has played and still continues to play. This clover has been used so extensively in the past that it is now difficult to find gumland that is free of it or its seed. *Lotus hispidus* seed is seldom sown now that white clover can be established on soil where it once grew. However, its establishment can be brought about by sowing it on a well-fallowed, firm seed bed or by sowing on a burn about March. The seed is sown at 3 lbs. to 5 lbs. per acre, with about 4 cwt. basic slag or 4 cwt. super, plus 5 cwt. lime per acre. On cultivated ground growth will be good during the following winter and spring.

Of recent years sowings of *lotus hispidus* in the province have been practically confined to a few acres for harvesting seed or on scrub burns. It has a place on scrub burns, where it can be established prior to the cultivation of the ground for the sowing of good ryegrass-white clover-paspalum pastures. Established in this way, *lotus hispidus* will produce a little fodder, and will raise the fertility a certain amount, making the subsequent grassing of the land with the better species an easier and better accomplishment.

## *Lotus Major*

*Lotus major*, a more vigorous plant, demands a little higher fertility conditions than *lotus hispidus*. Being a permanent plant, and therefore having to live through the dry season, it will not exist where soils dry out to such an extreme. Nevertheless, it is one of the few permanent clovers which will exist under very dry conditions. It will also grow under wet conditions. In this way it can be likened to strawberry clover, which will tolerate fairly wet conditions and thrive and produce under dry conditions.

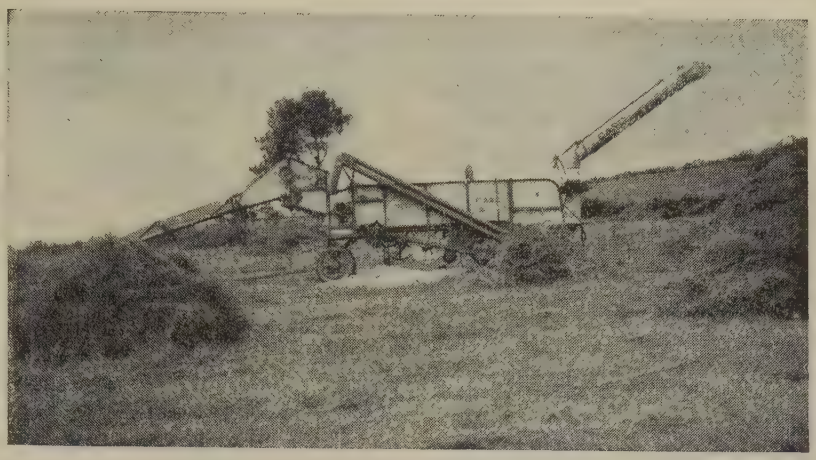

*Fig. 3.*—The mill surrounded by the *lotus major* cocks ready for threshing. This photo was taken in the same field as that in Fig. 1. All photos were taken on Mr. Jonker's farm at Riverhead.

It is a wonderful clover in its tolerance of conditions where most of our other pasture plants will fail. Of the clovers I know, it is most tolerant of wet conditions, for it will grow in wet gullies. On the reclaimed marine flats at Pipiroa, where failure of white clover was due to either very dry or salty conditions, *lotus major* existed alongside strawberry clover.

It is a wonderful pioneer on peat soils, which are very deficient in available plant foods and are frequently very wet. When drained, these soils dry out in summer, a condition which does not daunt *lotus major* with its long tap root. *Lotus major* is common on the steep slopes of our hill country, and, being a great endurer of shade, it will compete against the invading fern, which comes in as the fertility of soil lessens.

## *Feeding Value*

*Lotus major* is of better feeding value than *lotus hispidus*, and does not become unpalatable at any stage of growth. It is today included in almost all seed mixtures sown on second-class soils in the Auckland Province, for if soil conditions prove too poor, too dry, or too moist for white clover establishment, *lotus major* will take up the running.

At the present time there is some reason to believe that it could be used more for the breaking-in of second-class soils. Our gumland soils are now sown down immediately with high-producing strains of highly productive grasses and clover. The results have proved most satisfactory where proper cultivation methods have been adopted, where sowing has been carried out early in the autumn, and where ample supplies of lime and phosphate have been applied.

It is possible, however, that it may pay to sow a pioneer *lotus major* pasture before sowing these more highly productive grasses and clovers. This pioneer pasture should yield highly during the first season, for *lotus major*, although more tolerant of hard soil conditions, like *lotus hispidus*, revels in loose soil conditions. In addition to giving good returns, the *lotus major* would enrich the soil.

As time goes on and the soil becomes very hard, *lotus major* loses its vigour. It does not give up as quickly as *lotus hispidus*, and will give a good return for about three years after establishment. *Lotus hispidus*, on the other hand, will give a good return for only one year. After the three years are up the farmer should replough the area preparatory to sowing a permanent ryegrass-white clover-paspalum pasture.

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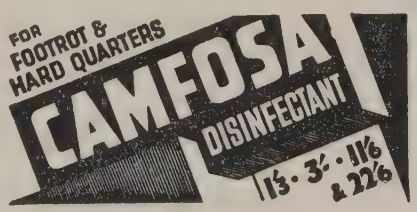

### *Establishment*

For establishment on gumland *lotus major* requires the same cultural treatment as *lotus hispidus*, and should be given annual dressings of 3 to 4 cwt. of slag or 3 to 4 cwt. of super and about 4 cwt. of lime per acre.

In sowing permanent pasture on gumland, paspalum, ryegrass, *lotus major*, red and white clovers are usually included in the mixture. Where neither red nor white clover establishes satisfactorily, the subsequent pasture may be considered a failure. A good establishment of *lotus major* is difficult to attain under competition from the ryegrass and the more frequent winter and spring grazing the presence of this grass entails. Where white clover establishment is good, then the pasture establishment is considered successful, for a good permanent clover establishment is necessary for the maintenance of a strong ryegrass and paspalum growth in the following years of the pasture's life.

In such a pasture, red clover establishment may be satisfactory but not outstandingly good, because red clover does not usually grow well on gumland. However, I have noticed that, on the few occasions where red clover has made an excellent growth in the summer following the sowing down—so great, in fact, that smothering of the ryegrass and white clover would be feared—the subsequent establishment was much superior to that where only a good or excellent establishment of white clover was secured.

### *Paving the Way*

Excellent red clover establishments on gumland are difficult to secure, and are generally the result of seed sown under ideal conditions, but excellent *lotus major* establishments are not difficult where this clover is sown alone. It is possible that preliminary stands of *lotus major* may pave the way to much better permanent pastures on our gumlands.

As *lotus hispidus* is so prevalent, New Zealand *lotus major* seed usually contains *lotus hispidus* seed as an impurity. A little *lotus hispidus* seed will not be detrimental, but purchasers of local seed should take care to see that the percentage of this impurity is not high. European *lotus major* seed generally has a low percentage of impurities.

The seed should be sown at the rate of 3 lbs. to 5 lbs. per acre. During the first winter and spring the grazing should be light to allow a good stand to establish. During the following summer production will be high. A seed crop can be taken, which may prove remunerative. The closing up of the field should be timed so that a crop 9 in. to 12 in. high is harvested in January.

If the crop is shut up too early it is more leafy and costly to harvest, and the yield per acre is often less. If the soil is fairly fertile the field should be closed in late November, and, if poor, in early November.

### *Mowing*

The crop is generally ready for mowing from 10th to 20th January. It is cut when most of the pods become a bronze colour, when the seed is yellow and doughy in texture, or when the first pods begin to open and shed seed. After cutting with the mowing machine the crop is left about four hours and then raked into light windrows. If the pods are exposed too long to bright sunshine they will shed their seed. The windrows are left until next day, when the material is dry enough to stack.

This is the general harvesting procedure if the weather conditions are favourable. The material is conveyed carefully, to avoid seed shedding, from the cocks to the stack by sledge or wheeled sweep. After about one month in the stack threshing begins. In the Riverhead district, near Auckland, this is carried out by small mills, and the charge is about 25s. per hour.

Well-managed *lotus major* stands give good winter grazing during the first two years, an average yield of 1 cwt. of seed per acre, and good late summer and autumn grazing. The dressed seed is worth usually about 1s 3d per pound.

Dodder is very prevalent in *lotus major* stands at Riverhead, and Fig. 2 shows a patch of a stand affected by dodder which has been scythed down. The material thus mown will be gathered and burnt before the stand is harvested.

In the Auckland Province wet weather often spoils harvesting conditions, and so the gathering of any crop, including *lotus major*, for seed is a somewhat risky undertaking.

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# Mercury Gauge Outfit For Testing Milking Machine Gauges

— By —
W. G. WHITTLESTON.
Animal Research Station,
Wallaceville.

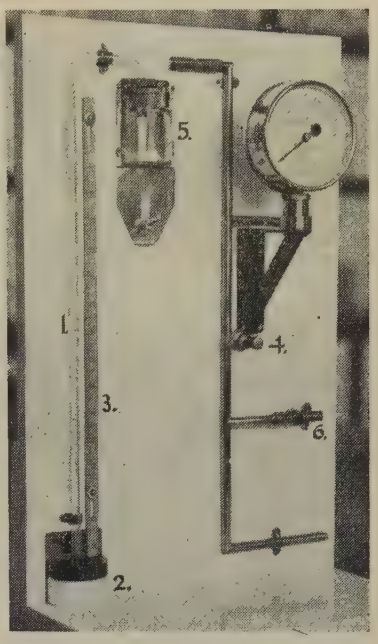
**It is highly desirable that the farmer should know at what vacuum his milking machine is operating. Hence, a wider distribution is needed of suitable standard gauges for testing milking machine vacuum gauges. This article describes a mercury gauge designed to facilitate such testing.**

IT is commonly recognised by dairy farmers that the vacuum gauge on a milking machine is one of the most unreliable parts of the machine. Even new gauges are quite likely to be in serious error. Of four new gauges recently taken at random from the stock of a reliable vendor, two were found to be reading too low by 1½in. and 2in. respectively. On one occasion the gauge used by a milking machine agent for checking other gauges was found to have an error of 4½in. This is a very serious error, which, fortunately, was quickly detected by the owner.

Nevertheless, the author has found cases in the field where machines whose gauges showed about 15in. were actually working at more than 20in. and the owners were not aware of the fact. It is highly desirable that the farmer should know at just what vacuum his machine is operating. Hence, there is a real need for a wider distribution of suitable standard gauges. This article describes a mercury gauge designed to facilitate such testing.

## *Gauge Described*

The gauge consists of a mercury column (1) 19 inches high, whose mercury reservoir (2) is wide compared with the diameter of the column. This construction avoids the need with ordinary tests for adjusting the scale (3) with different readings, and the column is not inconveniently high. The glass column is a stout-walled capillary tube with an internal diameter of at least 1-8in; smaller diameters would introduce undesirably large capillary errors. In order to avoid possible trouble due to the mercury rising too high in the column a small spring-loaded relief valve (4) is fitted, which




opens when the vacuum exceeds 16in of mercury.

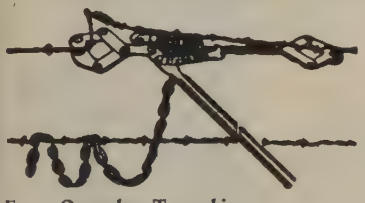
A glass trap (5) is also fitted, which will catch any liquid accidentally entrained in the tubing, and in the unlikely event of mercury being carried over the top of the column the trap will collect it. The mercury may then be returned by simply detaching the trap and pouring it back into the reservoir. A cock (6) opening to the air is fitted so that the vacuum in the apparatus can be adjusted to any desired level.

## *The Vacuum*

When possible, the vacuum for this apparatus is most conveniently obtained from a water-jet pump. If water under suitable pressure (about 10lb per square inch or more) is not available a steam ejector or mechanical vacuum pump may be used. Many types of all-metal water-jet pumps will function fairly well on steam. The source of vacuum need not go above 15 to 16 inches of mercury, and the volume displaced need be very small indeed.

Should the mercury level in the reservoir of the gauge be altered by accident, the scale, which is provided with an adjustment, should be reset as follows:—Adjust the vacuum in the instrument to approximately 15 inches, loosen the screws which hold the scale in place, and slide the scale until the bottom just touches the surface of the mercury. The screws are then tightened.

**HAYES' AUTOMATIC**
(SMOOTH GRIP)
**WIRE STRAINER**
FOR BARBED OR PLAIN WIRE.



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If a water-jet or steam-jet vacuum pump is used **it is important to open the adjusting cock to the air or otherwise release the vacuum in the apparatus before turning off the water or steam.** If this is not done water will be sucked back into the gauge.

The operation of the gauge is simple. Firstly, the source of vacuum is turned on, the gauge to be tested screwed into the socket constructed to take it, and the lock-nut tightened. This should be done with the adjusting cock. The cock is then partially or wholly closed, and the relief valve adjusted to blow off when the vacuum reaches 16in. For general purposes the gauge should be tested at 10in. and 15in.

### *Adjusting the Gauge*

If a gauge has a serious error, adjustment is best effected as follows:—

Remove the glass and carefully pull off the hand, using a small pair of pliers or some equally suitable tool; it is particularly important that the hand be pulled off without bending the spindle. If necessary, the face should be removed and the mechanism cleaned and oiled with a light-grade lubricating oil. After replacing the face, the gauge is mounted on the test gauge and the vacuum adjusted to the level at which the milking machine is usually operated. After gently tapping the gauge to ensure that the mechanism has come to equilibrium, the hand is replaced at the correct reading and pressed home firmly. It is advisable to check the gauges being tested at least at two different readings (say 10in. and 15in.). If it is badly out at one reading while correct at the other it should be returned to the supplier if it is new or replaced if it is old, as the adjustment of this fault is too tedious to be practicable.

### *Co-operation Invited*

It is suggested by the Milking Machine Investigation Committee recently appointed by the Minister of Agriculture that testing gauges similar to the above should be installed at dairy factories which desire to give this service to their suppliers. A stock of tested gauges might well be carried at the factory, and when a gauge brought in to be tested is found to be faulty is could be replaced and adjusted at leisure.

It is hoped that in the near future mercury gauge outfits, together with suitable water-jet pumps, will be available from manufacturers to all requiring them.

## Financial Aid For Farmers

ATTENTION is drawn to an advertisement appearing in this issue relating to facilities available to farmers for obtaining loans on the security of stock and chattels under the provisions of the Rural Intermediate Credit Act. The administration of the Act has been entrusted to the State Advances Corporation, which invites farmers who are desirous of securing financial assistance for productive purposes to address any inquiries for further information to the nearest office of the Corporation, or to the Office of the Secretary of any Rural Intermediate Credit Association established under the Act.


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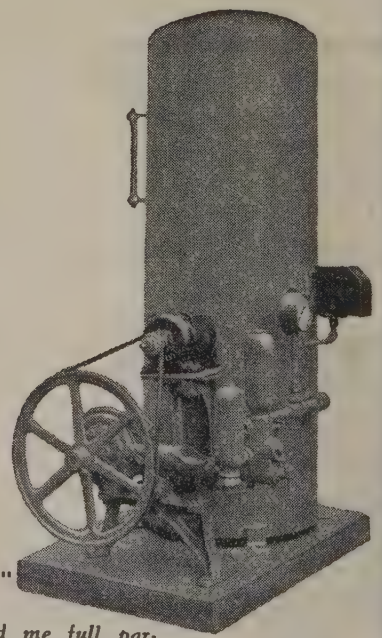

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# Grasses and Clovers of New Zealand

## Role Played by Subterranean Clover

Fig. 73.—In the warmer parts of New Zealand the value of subterranean clover is considerably enhanced by its ability to produce a considerable amount of winter and early spring feed.
[*S. H. Saxby, Photo.*

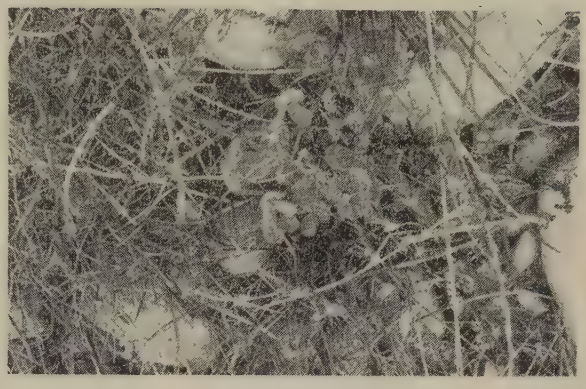

*Fig. 74.*—In recent years subterranean clover has proved to be of value on much of the lower fertility country in New Zealand. The illustration shows subterranean clover establishing in light shingle country together with perennial ryegrass.
[*H. Drake, photo.*

—By—

S. H. SAXBY,
Instructor in Agriculture, Dunedin.

This article concludes the series on the grasses and clovers of New Zealand. It deals with some of the clovers which thrive under conditions of low fertility or where the climate is not suitable to the growth of the highest producing varieties. In particular, attention is drawn to the role of subterranean clover.

**Crimson Clover** (*Trifolium incarnatum*).—Crimson clover is sown to a considerable extent in Europe, America, and Australia, but is not favoured in New Zealand, where it is only occasionally grown.

Crimson clover is an annual which makes very quick growth, and with early autumn sowing provides a considerable amount of winter and early spring feed. As it is strictly an annual it is of no value for even temporary pastures because of its rapid growth and resultant smothering effect and short life. Its only value is in drilling in on stubble to provide some winter feed or green manure for ploughing in in the spring.

Crimson clover has one serious fault —its hairiness when mature. If cut for hay, care should be taken that this is carried out before the flowers begin to fade. If left later than this the sharp, barbed hairs on the heads and stems become hard and wiry, and are apt to "mat" in the digestive tracts of animals, with possible serious digestive troubles following. On the whole, there appears to be little to recommend the use of crimson clover, as red clover is more valuable, as regards production, permanence, and feeding value.

Fig. 75.—Two plants, the names of which are frequently confused. On the left is black medick (or English trefoil), while on the right is suckling clover (or trefoil).
[*H. Drake, photo.*

Crimson clover may be recognised by its blunt, broad stipules in contrast to the long, pointed stipules in red clover and alsike. The stipules are prominently veined. The whole plant is hairy and erect-growing.

**Subterranean Clover** (*Trifolium subterraneum*).—Subterranean clover has been in New Zealand for many years, but it is only recently that it has come into prominence as a useful pasture plant.

It is one of the annual clovers, and, consequently, its existence depends on its ability to re-establish itself each year from seed. The plant derives its name from the manner in which it

buries its seed capsules in the ground shortly after flowering. In a pasture this serves a double and useful purpose in that the ripening seed is placed out of reach of the grazing animal and is automatically planted ready for germination when the first autumn rains fall. Subterranean clover is of greatest value on country which, in its present state, will not maintain white clover. On first-class soils with a high rainfall white clover is much superior to subterranean clover, but on second-class soils, where white clover does not thrive, the next best clover is subterranean.

### *A Pioneer*

Subterranean clover should be regarded not as the ultimate ideal clover, but as a pioneer clover paving the way for the establishment of white clover. Its rapid growth immediately increases the carrying capacity of pastures, with a resultant increase in soil fertility, which ultimately becomes sufficiently high to maintain at least a mixed white clover-subterranean clover sward.

Of the annual clovers, subterranean clover produces by far the greatest amount of leafage, which is very palatable and highly nutritious.

**Fig. 76.—Haresfoot trefoil is a very common annual clover on dry or low fertility country. It is of comparatively little value to stock.**

*[S. H. Saxby, Photo.*

Another advantage of subterranean clover is that, in districts where winter growth is possible, it makes a considerable amount of its growth in the winter and very early spring, and is therefore of great value as early feed for ewes and lambs.

Much of the consolidated sand country and poor, free-draining country in the North Island which has as its only clovers such plants as suckling clover, haresfoot trefoil, clustered clover and *lotus hispidus*, can be profitably converted into comparatively high-producing pastures by the use of subterranean clover.

Subterranean clover shows a greater response to phosphatic top-dressing than any other annual clover. Because of this, the introduction of subterranean into suckling clover country is of great importance if the best results are to be obtained from the use of phosphatic top-dressing. Suckling clover responds to top-dressing, but not to the same degree. Consequently, top-dressing, plus subterranean clover,

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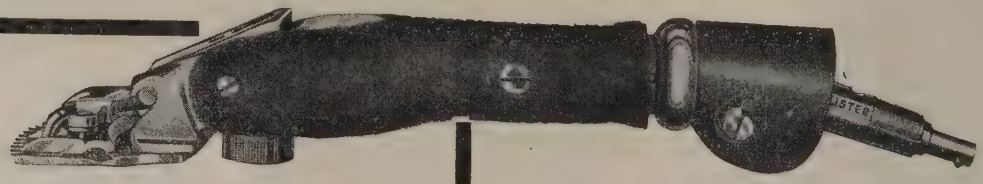

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gives an infinitely better return for the outlay than the top-dressing of suckling clover or any other annual clovers.

## *Methods of Sowing*

Subterranean clover may be introduced in various ways. It may be surface-sown on existing pastures, or it may be sown on a prepared seed bed. It may be sown with or without grass or cereal, but should preferably be sown in early autumn.

When sowing on a prepared seed bed the best establishment of subterranean clover is obtained by sowing it together with early autumn-sown oats. If well established, the clover will stand grazing when the oats are fed off in the winter. When the crop is shut up in the spring the clover has an excellent opportunity for flowering and seeding before dying off in the summer. By this means a thick stand is assured for the following autumn, when a grass mixture may be broadcast or lightly drilled in.

Satisfactory results may also be obtained by sowing subterranean clover in a general mixture. For the first year subterranaen clover requires to be grazed lightly; after that grazing may be severe.

Subterranean clover may be introduced into existing swards by drilling it in when the soil is sufficiently loose or by sowing it on a surface which has been broken up by heavy harrows. Grazing should be light until the plants are well established. On country which cannot be cultivated the seed may be broadcast with superphosphate. No matter what method of sowing is adopted the application of superphosphate at that time is essential.

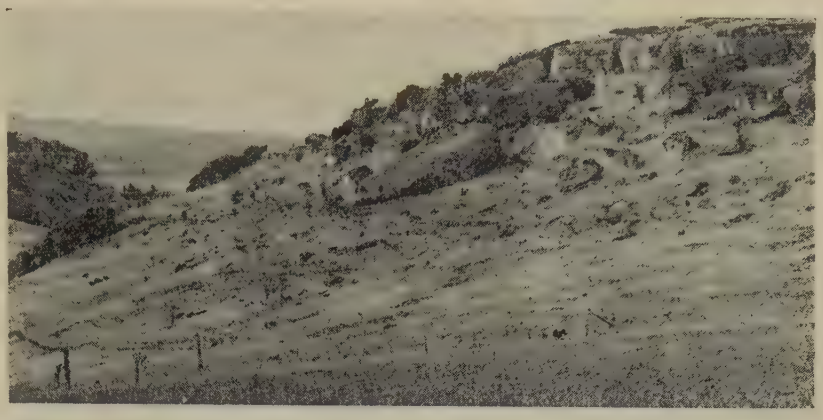

**Fig. 77.—On limestone country black medick is very common as a volunteer legume. The growing of lucerne is usually successful on black medick country.**
*[S. H. Saxby, Photo.*

**Fig. 78.—A close-up view of spotted burr clover showing its dominating effect on the small amount of grass left in the sward.**
*[S. H. Saxby, Photo.*

## *Suitable Localities*

At present subterranean clover is giving good results in most of the North Island, and its use is expanding rapidly. In the South Island it is giving satisfactory results in Marlborough, Canterbury, and North Otago. In the latter two districts it is producing very good swards on country which previously ran rapidly to browntop, sweet vernal, hairgrass, suckling clover, and haresfoot clover.

In the wetter districts of Otago and Southland subterranean clover does not thrive, nor does it appear to be necessary, as with the use of lime, phosphate,

**Fig. 79.—In addition to exerting a smothering effect on useful pasture plants burr clover is disliked and largely neglected by stock. This feature is one factor which is responsible for its ability to reseed so freely.**
*[S. H. Saxby, Photo.*

and the right strain, white clover is quite satisfactory.

**Strains of Subterranean Clover.**—Recent work in Australia and New Zealand has shown that there are several distinct strains of subterranean clover, and for the present purpose may be classed in three groups:—

(1) Early-flowering Type.—This is very low in production, and although of value in some of the driest districts in Australia, has no place in New Zealand pastures, as better strains are available.

(2) Mid-season Type.—This type is being sown widely and is giving satisfactory results in this country.

(3) Late-flowering Type.—Only a small amount of this strain has been sown in New Zealand. Its value is limited to the sowing of it in a mixture with the mid-flowering strain in order to prolong the period of production. The pure sowing of the late-flowering strain cannot be recommended, as one of the main attributes of subterranean clover, namely, early spring growth, is lost.

## *Common and Widespread*

**Suckling clover** (*Trifolium dubium*) is frequently called "trefoil," and on this account there is often considerable confusion in the naming of this plant and English trefoil, or black medick.

Suckling clover is the most common and most widespread of the annual clovers in New Zealand. It occurs chiefly on land of which the fertility is too low to maintain white clover without topdressing. On second-class hill country suckling clover is very valuable, as it produces a fair amount of autumn and spring feed. The presence of suckling clover on country which will carry ryegrass, cocksfoot, or dogstail can usually be regarded as an indication that, with topdressing, white clover will thrive, and under these conditions suckling clover is of little value.

The only country on which the sowing of suckling clover is justified is that which will not carry white clover, and in the North Island, at least, its value has been reduced considerably since the introduction of the much superior plant, subterranean clover. In districts where no clovers are present and where subterranean clover will not thrive the introduction of suckling clover is warranted, but it should never be sown on country which will maintain white clover or subterranean clover.

In the young stages suckling clover is not unlike white clover. A reliable method of distinguishing these two clovers is by the veining on the leaflets. If the underside of a leaflet of suckling clover is examined closely it will be seen that the veins are straight

**Fig. 80.—*Lotus corniculatus* (above) and *lotus major* are perennial types of this leguminous group of plants. The former is of some value under fairly dry conditions, while the latter thrives in wet climates or low-lying country.**

[*S. H. Saxby, Photo.*

and unbranched, whereas those of white clover are repeatedly branched.

**Clustered Clover** (*Trifolium glomeratum*).—This is an annual clover occurring throughout New Zealand, but common only in parts of the North Island. Its fertility requirements are very similar to those of suckling clover, but it will grow only on light, open soils. Agriculturally, its value is much the same as that of suckling clover. On second-class sandy country it produces an appreciable amount of feed together with other annual plants.

On first-class country where white clover should thrive annual clovers are of little value, and must be considered weeds, as they are taking up space better occupied by perennials.

## *An Objection*

One of the main objections to clustered clover in seed-producing districts is the similarity in shape, size, and general appearance of its seed to that of white clover. As they are frequently harvested together, their separation is very difficult. Consequently, clustered clover seed is a common impurity in North Island-grown white clover seed.

**Striped Clover** (*Trifolium striatum*) occurs less frequently than clustered clover, but is of the same agricultural value. Its seeds are much larger, however, and is seldom seen as an impurity in white clover seed.

**Reversed Clover** (*Trifolium resupinatum*).—This is an annual clover with

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a limited habitat and climatic range, being found as a volunteer on some of the saline soils in the northern parts of the North Island. It is an autumn-establishing plant, and its winter growth is negligible. During the spring, however, it makes very vigorous growth and produces a large amount of quite valuable and attractive feed.

In common with many other annual pasture plants, reversed clover, when dominant in the sward, is responsible for very low production from the pasture during the summer. This is because it dies completely very soon after seeding, thus leaving an open and non-productive sward.

Reversed clover must be regarded as second best to the perennial strawberry clover, and once the latter is established the reduction in the amount of reversed clover should be aimed at. But until strawberry clover is well established reversed clover plays an important part as a high-producing although short-lived legume.

**Fig. 81.—On low-lying and swampy country *lotus major* plays a valuable part in that it grows up through tall-growing plants, such as rushes, thereby inducing stock to damage these plants while foraging for the *lotus*. In association with bracken fern and hard fern the same effect is apparent.**
*[S. H. Saxby, Photo.*

**Fig. 82.—*Lotus hispidus* is essentially a plant of low fertility conditions, and was at one time useful as a pioneer plant in the North Auckland gumlands**
*[S. H. Saxby, Photo.*

## *Poor Producer*

**Haresfoot Trefoil** (*Trifolium arvense*).—One of the poorest producing and least valuable of the annual clovers in New Zealand. Its habitat range is very narrow, and is found only in the thinnest of pastures on dry, gravelly soils. On better soils it never gets a hold. Even on the soils on which it does occur, haresfoot trefoil is of little or no value. The amount of feed that it produces is extremely small, and is not liked by stock. Early in the summer it bolts to seed and dies.

The problem of haresfoot trefoil is not one of eradicating or controlling it, but is one of finding some other clover that is better. In the northern parts of New Zealand it is being replaced by subterranean clover, but in the South Island climatic conditions are rather severe for this to be always possible.

**Black Medick or English Trefoil** (*Medicago lupulina*).—This is not a true clover, but is very closely allied to lucerne and burr clover. Although sown to some extent in Europe, it has never come into great prominence in New Zealand, where only a small quantity is sown annually.

It is an annual or biennial plant with fairly small leaves, which are borne on long runners. The amount of feed

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it produces is not large, although it is well liked by stock.

It does best on limestone country, and is a useful substitute for white clover if this cannot be grown. On first-class country it is classed with the other annual clovers, and is of little value compared with the perennial clovers.

The sowing of black medick is warranted only on second-class limestone country where white clover cannot be grown.

In common with other plants of the same genus, black medick may be distinguished from the true clovers by the longer stalk of the middle leaflet and by the small point in the indentation at the extremity of each leaflet. The ripe pods are black and somewhat curled like those of lucerne.

## *Troublesome Clover*

**Burr Clover** (*Medicago maculata and M. denticalata*).—This is a free-seeding and strong-growing annual plant closely allied to lucerene, and occurs chiefly in districts suited to the growing of the latter.

As a pasture plant it is one of the worst of the annual volunteers. Its herbage is disliked by stock, its burrs get into the wool, and because of its strong-growing habit, frequently smothers the grasses and other clovers until the pasture becomes dominant burr clover and useless.

As with other annual clovers, burr clover thrives under conditions of repeated seed production, which allow it to grow to its maximum, seed, and then re-establish in the weakened sward.

The control of burr clover in some of the seed-producing districts in the North Island is of considerable importance.

Where the burr clover is practically dominant, there is no alternative to ploughing and resowing. Where the clover occurs in an otherwise good pasture, fairly close summer grazing and topping with the mower should be adopted to prevent reseeding. Every encouragement should be given by top-dressing and management to the vigorous growth of the better grasses of the sward, which will ultimately check the spread of the burr clover.

The distinguishing characteristics of burr clover are the prominent toothed stipules and the toothed burrs.

**Fig 83.—Annual clovers generally play a useful part on the lower fertility country, often acting as pioneers for white clover. In this country in Marlborough are present the following clovers: White clover, striated clover, hares-foot trefoil, clustered clover, suckling clover, hop trefoil, and black medick.**
*[S. H. Saxby, Photo*

## *Used on Bush Burns*

**Birdsfoot Trefoil** (*Lotus major*).—This is a tall-growing perennial plant suited to areas of fairly high fertility and high rainfall or high moisture content. It produces a considerable amount of feed which is eaten fairly readily by all classes of stock.

There are two conditions where *Lotus major* is of value. Firstly, it is a valuable plant for sowing on bush burns or loggy country where secondary growth is troublesome. Under these conditions *Lotus major* produces a good quantity of feed which is sufficiently attractive to draw stock to parts that they would not otherwise go to. Thus *Lotus major* plays a small but important part in the control of secondary growth by crushing with cattle. Secondly, *Lotus major* is of value in swampy country, where, in association with Yorkshire fog and rushes, it provides a considerable amount of feed as it trails through the rushes and other tall-growing plants. *Lotus major* is slow to establish. About three years elapse before it reaches its maximum production.

**Lotus Hispidus.**—Because it would grow a reasonable amount of fodder under low fertility conditions, *Lotus hispidus* was employed extensively and fairly successfully as a pioneer on poor soils of North Auckland. It was grown to build up the soil fertility for the sowing of better species which would not grow well in the virgin soil. *Lotus hispidus* is an annual carrying a fair number of hairs on its herbage in the winter, which develop to a very great extent as the plant matures. It sets seed in the late spring and dies. In the less hairy stage it is relished by stock, but in the late spring it is disliked by them.

## *Impetus of Cultivation*

In the past, with or without the intention of the farmer, it has played an important part in the improving of our northern poor clay soils. It is a low producer when the soil is undisturbed, but under cultivated conditions, or soon after cultivated conditions, it will yield heavily in the winter and spring. Thus, fields of permanent pasture containg no *Lotus hispidus*, when ploughed for cropping, are often infested by a heavy growth of *Lotus*.

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The clover can be established on a scrub burn in the autumn. Under these conditions, especially if the scrub growth is short, the production of *Lotus hispidus* is rather poor, but the quickness of the establishment and the elimination of cultivation often has warranted this method of introduction.

Good and more lasting results were secured from preliminary cultivation and a long fallow preceding sowing in March with 3-5lb. of seed and 2 or 3 cwt. of basic slag. After one or two years the ground set hard, and production from *Lotus hispidus* was poor; in fact, the production in the second winter and spring was much inferior to that of the first year, as re-establishment from the first-year's seeding in the hard, dry soil was most difficult. Bare ground resulted, followed by invasion of flatweed. When this stage arrived, the area was reploughed and sown in permanent pasture.

Nowadays, *Lotus hispidus* is seldom employed as a pioneer because of the satisfactory results secured from modern methods of establishing certified white clover and certified ryegrass without a pioneer *Lotus hispidus* pasture.

*Lotus major* is a better pioneer than *Lotus hispidus*, but its fertility demands are higher and were higher than that which was supplied by the early settlers on the gumlands. Hence the great value placed on *Lotus hispidus* by these pioneers.

# Slaughterings of Stock

THE following returns of slaughterings of stock at meat-export slaughterhouses and abattoirs for the twelve months, May, 1939, to April, 1940, has been compiled by the Livestock Division:—

| District | Cattle | Calves | Sheep | Of which Ewes were | Lambs | Swine |
|---|---|---|---|---|---|---|
| **North Island** | | | | | | |
| Meat-Export Slaughterhouses— | | | | | | |
| Auckland | 182,890 | 591,791 | 475,846 | 295,142 | 1,188,791 | 319,529 |
| Poverty Bay-Hawke's Bay | 50,703 | 62,928 | 852,783 | 364,791 | 1,523,548 | 29,489 |
| Taranaki-Manawatu | 93,710 | 231,350 | 641,117 | 361,216 | 1,569,854 | 181,647 |
| Wairarapa-Wellington | 36,753 | 19,948 | 540,020 | 269,080 | 1,115,962 | 37,218 |
| Totals | 364,056 | 906,017 | 2,509,766 | 1,290,229 | 5,398,155 | 567,883 |
| Abattoirs | 119,540 | 39,191 | 474,927 | 248,399 | 78,324 | 121,612 |
| North Island Totals | 483,596 | 945,208 | 2,984,693 | 1,538,628 | 5,476,479 | 689,495 |
| **South Island** | | | | | | |
| Meat-Export Slaughterhouses— | | | | | | |
| Nelson-Marlborough | 959 | 9,776 | 47,379 | 16,024 | 174,074 | 11,346 |
| Canterbury | 13,280 | 45,207 | 558,816 | 450,651 | 2,564,122 | 37,517 |
| Otago-Southland | 7,632 | 40,356 | 348,600 | 284,893 | 2,504,318 | 5,810 |
| Totals | 21,871 | 95,339 | 954,795 | 751,568 | 5,242,514 | 54,673 |
| Abattoirs | 55,477 | 14,766 | 273,448 | 137,366 | 44,029 | 28,826 |
| South Island Totals | 77,348 | 110,105 | 1,228,243 | 888,934 | 5,286,543 | 83,499 |
| **Dominion** | | | | | | |
| Meat-expt. Slaughterhouses | 385,927 | 1,001,356 | 3,464,561 | 2,041,797 | 10,640,669 | 622,556 |
| Abattoirs | 175,017 | 53,957 | 748,375 | 385,765 | 122,353 | 150,438 |
| Grand Totals | 560,944 | 1,055,313 | 4,212,936 | 2,427,562 | 10,763,022 | 772,994 |
| In addition the following stock were slaughtered for local consumption at rural slaughterhouses during the 12 months ended 31/3/40. | 76,732 | 1,913 | 233,593 | Unknown | 21,597 | 28,215 |
| Same period 1938-39— | | | | | | |
| Meat-export Slaughterhouses and abattoirs | 508,033 | 1,016,863 | 3,958,576 | 2,063,085 | 9,912,674 | 966,378 |
| Rural Slaughterhouses | 84,351 | 2,053 | 220,560 | Unknown | 19,976 | 28,334 |
| Same period 1937-38— | | | | | | |
| Meat-export Slaughterhouses and abattoirs | 500,274 | 1,062,948 | 3,122,380 | 1,604,317 | 9,850,247 | 1,057,188 |
| Rural Slaughterhouses | 87,873 | 2,179 | 216,338 | Unknown | 19,545 | 28,293 |

# Slaughterings of Pigs

The 137,401 pigs killed during April were distributed in weight ranges as follows:—

| | |
|---|---|
| Under 60 lb. | 2,292 |
| 61-100 lb. | 36,679 |
| 101-120 lb. | 29,463 |
| 121-160 lb. | 51,506 |
| 161-180 lb. | 11,110 |
| Over 180 lb. | 3,554 |
| Sundries | 2,797 |

The grading of pork is 91 per cent. primes and 9 per cent. second quality, and of bacon 77 per cent., 18 per cent. and 5 per cent. of prime 1's, prime 2's, and second quality respectively.

In the different weight ranges of baconers the grading is as follows:—

| | |
|---|---|
| 101-120 lb. | 91%, 6%, 3% of P1, P2 and 2nds. |
| 121-160 lb. | 74%, 21%, 5% of P1, P2 and 2nds. |
| 161-180 lb. | 55%, 33%, 12% of P1, P2 and 2nds. |


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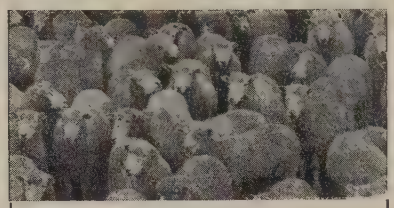

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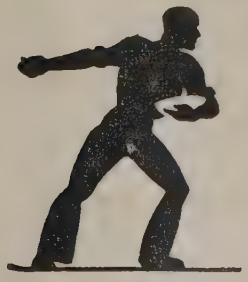

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# Wheat Varieties in the Wairarapa

— By —

N. LAMONT,

Instructor in Agriculture, Masterton.

**Experience with wheat varieties in the Wairarapa shows that Cross 7 has all the good qualities — and more — of Solid Straw Tuscan, and can therefore be regarded as the best spring wheat for the medium to best soils. Tainui is worth further trials on light country for spring sowings. Hunters is yet to be seriously challenged for winter sowings.**

*Fig. 2.*—A close-up of a crop of Cross 7 wheat growing beside the Tainui in *Fig. 1;* the two photographs were taken within 6ft. of each other.

[*N. Lamont, photo.*

*Fig. 1.*—A close-up of a crop of Tainui wheat. Compare with Fig. 2.

[*N. Lamont, photo.*

THE climate of the Wairarapa district more closely resembles that of Canterbury than that of any other North Island district, and consequently one finds this district prominent among the limited wheat areas of the North. In normal seasons a cool, moist spring is followed by hot, dry weather in the New Year, and good yields of high-quality grain are regularly obtained.

During recent years the standard varieties have been Solid Straw Tuscan and Hunters, but although S. S. Tuscan is still a favourite, Hunters has been forced to retreat before the new variety Cross 7, which has shown itself to have all the desirable qualities of Tuscan with some added virtues as well. Tainui has been grown this year for the first time, but some expression of opinion is possible with reference to its potentialities.

## *Acreages and Yields*

Information to hand at present indicates that the following approximate acreages of each variety have been grown in this district during 1939-40—Cross 7, approaching 300 acres; S.S. Tuscan, about the same or a little less; Hunters, about 150 acres; Tainui, about 20 acres. The yields are approximately as follows:—Cross 7, 37 bushels per acre; Tuscan, 33 bushels; Hunters, 30 bushels; Tainui, 43 bushels.

It is not considered, however, that this yield of Tainui can be taken as truly comparable with the others in view of the small acreage involved. In fact, the following figures based on selected crops in the same locality are probably a more reliable indication of the relative capabilities of Cross 7 and Tainui, regarding Cross 7 as our major spring wheat and Tainui as a potential rival.

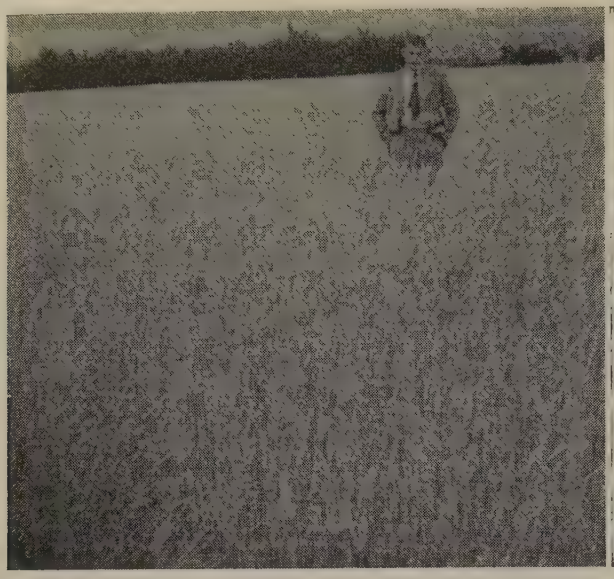

*Fig. 3. (left)*—Although the dry spring produced a short straw, this crop of Cross 7 wheat produced 58.5 bushels per acre. *Fig. 4. (right).*—This crop of Hunters yielded 66.6 bushels per acre. The same man as appears in *Fig. 3* is below the tree on the left.

[*N. Lamont, photo.*

All three farms abound one another, and in the case of farm A the two varieties were in the same paddock. Other Cross 7 yields in neighbouring farms were 45 bushels, 59 bushels, 50 bushels, and 53 bushels, and although the available evidence is as yet scanty, such evidence as there is would suggest that Tainui must have other desirable features if it is to compete seriously with Cross 7 on the better wheat land of the Wairarapa.

| Farm. | Cross 7 | | Tainui. | |
|---|---|---|---|---|
| | Area | Yield | Area | Yield |
| A | 7 acres. | 43.3 | 9 acres. | 42.6 |
| B | — | — | 8¼ acres. | 50.9 |
| C | 13 acres. | 58.5 | — | — |
| Average Yields | | 53 bushels. | | 47 bushels. |

## *Tainui v. Cross 7*

On the contrary, however, there is one character of Tainui that compares most unfavourably with Cross 7, and that is the relatively weak straw of Tainui. The illustrations show this clearly, and it must be borne in mind that last spring was unusually dry and, until crops were in stook at least, relatively free from wind. On the other hand, the extraordinary rapid maturity of Tainui suggests that it may be of use for late sowing on heavier country, or for normal sowing on

(*Continued on opposite page*).

*Fig. 5.*—A crop of Tainui wheat grown near Masterton. Last spring was dry and relatively free from wind.

[*N. Lamont, photo.*

# The Meat Regulations, 1940

## Summary of New Provisions

A. E. MORRISON, Solicitor, Department of Agriculture.

BY the Meat Regulations 1940, made under the Meat Act 1939, which came into force on April 1, and which repeal the Slaughtering and Inspection Act 1908 and its amendments, the regulations under the repealed enactments are revoked and fresh regulations substituted. The new regulations come into force on June 1.

Although rewritten to comply with the new Act, the regulations follow substantially the provisions of the regulations that have been replaced. Attention is drawn, however, to the following new matter contained in the regulations.

### *Licences*

Where a meat-export slaughterhouse licence is granted for premises to be used for the slaughter of pigs only, pursuant to section 30 (2) of the Act, a condition may be imposed in the licence limiting the class of stock to be slaughtered in the premises to pigs only. The object of this provision is to prevent, if considered desirable in the public interest, such premises being operated as regular meat-export slaughterhouses to the possible detriment of existing works already established in the district and found to be adequate to meet the requirements of the district in respect of the slaughter of all classes of stock for export.

A form of application for renewal of a meat-exporter's licence and a certicate of renewal of the licence is now incorporated in accordance with section 55 of the Act. Under the repealed Act it was necessary to issue a fresh licence each year, and the licences expired after 12 months from the date of issue. All such licences now expire on June 30 each year.

### *Construction and Sanitation*

The walls of the killing and dressing places in a rural slaughterhouse must be of concrete or brick, stone and mortar, and the interior surface to a height of 6ft. from the floor must be finished smooth. The new requirement, however, does not affect existing licensed premises so long as they are at all times maintained in a sanitary condition to the satisfaction of the inspector.

All offal, heads, bones, etc., in a rural slaughterhouse must be disposed of to the satisfaction of the inspector, and must not be allowed to remain in or about the slaughterhouse. Adequate provision for the storage of hides and skins must be made to the satisfaction of the inspector.

### *Inspection Fees*

Formerly, the inspection fee on sheep and lambs was 5d per dozen. This fee is now raised from June 1 to 6d per dozen. Under the revoked regulations a special inspection fee was imposed on pigs slaughtered at abattoirs and meat-export slaughterhouses. The proceeds of this special fee are applied for purposes relating to the development of the pig-production industry. Under the new regulations the incidence of this fee is extended to all pigs slaughtered in licensed premises, namely, abattoirs, meat-export slaughterhouses, and rural slaughterhouses.

### *Hydatids in Dogs*

For the purpose of checking the spread of hydatids to human-beings, regulation 13:2 makes it an offence to feed dogs with diseased meat or offal or with any raw offal.

Copies of the regulations may be obtained on application to the Government Printer, Wellington, for the price of 1s per copy, plus postage, remittance with order.

## WHEAT VARIETIES—continued from previous page

light stony country likely to dry out badly when later varieties are just coming into ear.

The small amount of data available would, in fact, suggest that Tainui is well worth further trial on very light country in the Wairarapa, but for the better class of wheat country in this district one would definitely recommend Cross 7.

Hunters must, of course, hold pride of place as a winter wheat, and although its long straw generally makes it impossible to "head," its tendency to shake makes binding desirable in any case, while its resistance to lodging and its high yield ensured its well-merited popularity.

### *Summary*

One may summarise the position so far as wheat varieties in the Wairarapa are concerned as follows:—As growers have already discovered, Cross 7 has all the good qualities—and more—of S.S. Tuscan, and can, therefore, be regarded as the best spring wheat for the medium to the best soils. Tainui is worth further trials on light country for spring sowings. Hunters is yet to be seriously challenged for winter sowings.

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# Glasshouse Tomato Growing

## Influence of Management On Prevalence of Disease

F. SYDENHAM, Assistant Horticulturist, Wellington.

It is the aim of all glasshouse tomato growers to produce abundant and payable crops. To produce a plant such as that shown in the illustration on the left, which matured 12lb. of perfect fruit, is not easy, and is not achieved by many growers. To obtain high-producing plants of good quality in either cool or heated houses, very careful attention is required to be given to details of management. It is with the view of assisting growers who are not meeting with the success desired that this article has been written.

DURING the past season many enquiries and specimens of diseased plants were received from growers of glasshouse tomatoes. The cause of the trouble could invariably be traced to some feature of the management which produced conditions entirely unsuited to the proper development of the tomato plant.

The troubles most commonly encountered were leaf-mould caused by the fungus *Cladosporium fulvum*, and the failure of the blossoms to set, largely due to insufficient soil moisture and unsatisfactory ventilation. The conditions found to be having an important bearing on both the incidence of mould and the non-setting of fruit were watering, ventilation, and manuring.

### Watering.

Watering was possibly one of the greatest causes of the unsatisfactory condition in the plants. It was common for the surface of the ground to be wet, but the lower strata to be too dry for proper root development. Such a condition occurs in the subsoil when small quantities of water, sufficient only to moisten the surface soil, are given.

After this light watering the plant soon shows signs of requiring more, and consequently it is repeated daily or at two- to three-day intervals. This practice increases the humidity of the atmosphere within the house to a degree that is favourable to the development and spread of *Cladosporium*.

### *Watering Before Planting*

In general, more attention should be paid to the watering of the house before the plants are set out. The soil and the sub-soil should be thoroughly wetted, which entails systematic flooding. Two to three weeks after the flooding, when sufficiently dry, the surface soil should be cultivated in preparation for planting.

### *Planting To Assist Watering*

So that the entire surface of the ground need not be wetted during subsequent watering, it is advisable to set the plants in furrows, as is shown diagramatically in Fig. 2. It is a good practice to set them in double rows as shown, allowing 18 inches between each row and 36 inches between the double rows.

The wider space permits of the handling of the plants with relative ease. During the early stages of growth, water may be concentrated in the furrow. As the plants develop, they may be earthed up as is shown in Fig. 3, and two furrows are then available for watering.

### *When Is Water Required?*

If the soil has been thoroughly moistened before planting there should be no need to apply additional water, except possibly a little with each plant at planting time, until the first bunches of fruit have set. This may be two months after planting. The time when this watering should begin is indicated by the condition of the plants. A slight wilting during the hot hours of the day does not necessarily indicate that water is required, but when it is in evidence early in the morning, then additional water should be given.

In the early stages of development of the plants the 18 inch wide furrow between the rows should be flooded. The whole area will not require additional moisture until the crop is well advanced. When the plants are small water may not be required for 10 to 20 days, and as they grow it may be necessary to apply water at seven to 14-day intervals. After watering, the surface layers should be loosened to produce a dry mulch. This serves the double purpose of retaining the moisture in the soil and reducing the humidity of the atmosphere.

It is only when the plants are carrying a large area of leafage and the fruits are developing rapidly that watering should be done over the entire space between the ridges.

If sufficient water is applied at each watering there should be no further need of additional supplies for at least a week.

### *Time to Apply*

On no account should water be applied during the afternoon; it should be given early in the morning, and, if possible, a bright day should be selected. If the air becomes saturated with moisture, as occurs with afternoon watering, conditions very favourable for the development and spread of tomato leaf-mould are obtained.

### *Effect on Fruit-set*

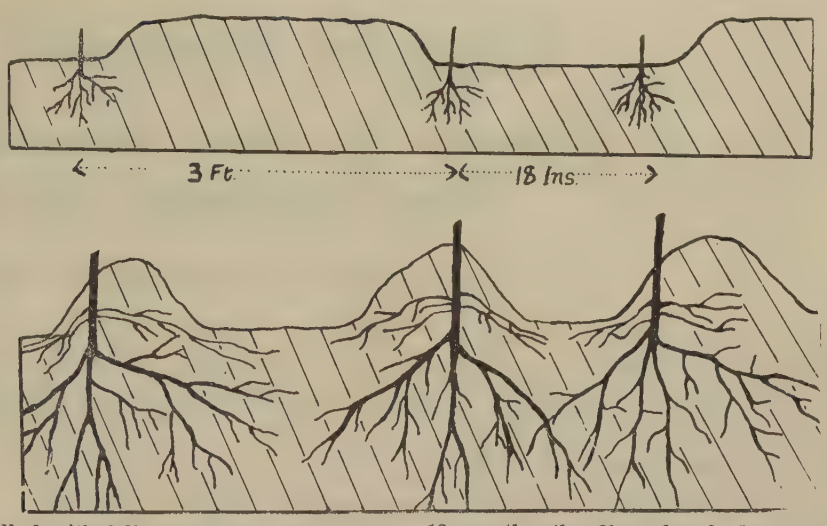
A common sign of both insufficient and over-watering is the non-setting of the fruit. There are a number of causes of the failure of fruit to set, but this is possibly the most common. In a number of the houses visited it was the absence of water in the lower levels that contributed to the trouble.

### Ventilation.

The house should be sufficiently ventilated during the day to maintain a reasonably dry atmosphere. During the cool weather it should be closed at night to retain the heat and opened again early in the following morning. On bright sunny and calm days as much ventilation as possible should be given, but when winds occur only such ventilators as do not permit a cold draught to force its way into the house should be opened.

It is necessary to watch the weather closely and to adjust the ventilators so that the temperature in the house may be maintained within reasonable limits, and to ensure that the humidity of the atmosphere may be kept reasonably low. As the nights become warmer, a little ventilation may be allowed at night, but the temperature should not be allowed to fall below 45 degrees Fahrenheit, and during the daytime it should not exceed 90 degrees Fahrenheit.

It is inadvisable to use the side ventilators until the plants are well developed and the fruit has set. Top ventilation is quite sufficient until the plants have made considerable growth, and it is only when the house is well




filled with foliage that additional ventilation is required to remove the large amount of moisture transpired by the plants. Side ventilation should be avoided during the blossoming period, as it is likely to cause a dropping off of the flowers without the fruit setting.

### Manuring.

The amount of plant food in the soil and its availability have much to do with the health and productivity of the crop. Excessive quantities of artificial fertilisers should be avoided. Sufficient, however, should be added to the soil to enable the plants to make healthy growth.

An over-supply of nitrogen produces soft, succulent plants which are very liable to disease and which carry only a few blossoms. Insufficient nitrogen, on the other hand, will produce plants of poor colour and plants which are also liable to disease. The optimum amount is available when the soil is adequately supplied with humus; a cover-crop grown in the house after the tomatoes are harvested and dug in when it has made maximum development will assist in maintaining the humus content of the soil. This cover-crop should be allowed to develop until it becomes fibrous, for at earlier stages than this the quantity of humus derived from it is small.

In place of the cover-crop, well-rotted turf, leaf-mould, compost, or horse manure may be used. Cow manure is not advised, as it is inclined to consolidate the soil, As an alternative to these materials, rotted straw may be found quite useful. If stacked and exposed to the weather for 6 to 12 months, the fibres break down and a material which breaks readily when twisted is produced. This is very suitable for adding to the soil because of its mechanical action in opening up a soil and its ability to form humus.

### *Manuring Before Planting*

The supply of phosphate should be maintained, and for general purposes 4oz. of bone-meal and 2oz. of superphosphate per square yard should be applied before planting.

Potash has a marked effect on the health and vigour of the crop. Plants which are adequately supplied with this fertiliser are much more able to resist infection by the organisms causing disease. With this crop, where disease is an important factor in reducing productivity, an application of sulphate of potash at the rate of two ounces per square yard is recommended. Where the supply of available potash is plentiful, the loss of plants through spotted wilt is said to be lessened.

Both the superphosphate and the potash should be applied two to three weeks before the planting time.

### *Manuring After Planting*

When harvesting begins a further application should be given. This may be applied as a liquid dressing. Half an ounce each of nitrate of soda and sulphate of potash and 1 ounce of superphosphate dissolved in a gallon of water will be sufficient for four plants, and should be given the day after watering.

# Costs of Wintering Pigs

## It Is Better To Have November Bacon Than September Burials

Contributed by the LIVESTOCK DIVISION.

THE results of the baconer competition by Messrs. W. and R. Fletcher (N.Z.), Ltd., in Taranaki last year are worth careful study, and show the profitableness of keeping pigs going through the winter and having November bacon instead of September burials.

The competition was for the best pen of six baconers carried through from the store stage (approximately 40 to 50 lb. live-weight) to a bacon carcass weight of 120 to 160 lb. Approximately 85 farmers entered for the competition, and thanks to the efforts of Mr. C. H. M. Sorensen, Supervisor to the Taranaki District Pig Council, the costs of bought feed for wintering these pigs on 55 farms are now available. Bought feeds include meat-meal, pollard, barley, and mixed meals, where used. Meat-meals are charged at 1½d per lb., barley and pollard at 1d per lb., and mixed meals at 1½d per lb.

The following average figures have been taken out on a per pen basis (six pigs):—

| | Avge. | Highest | Lowest |
|---|---|---|---|
| Original value of 6 pigs at 15/- ea. | £4 10 0 | — | — |
| Cost meals bought | £3 15 0 | £7 2 0 | £2 3 0 |
| Value credited to farm feed used | £13 17 0 | £17 8 0 | £9 6 0 |
| Sale value of pigs | £22 2 0 | — | — |
| Age at slaughter (days) .. .. .. | 250 | 311 | 197 |
| Meal costs per lb. of meat (pence) | 1.09 | 1.91 | 0.55 |
| Rate of growth (carcass) .. .. | 0.56 | 0.78 | 0.42 |

These returns are the average for the whole of Taranaki. The one factor common to all is that meat-meal was used at the rate of not less than half a pound per pig daily. Some farmers used grain-meals as well along with skim-milk or whey or buttermilk in addition.

The results from different feed combinations are as follows:—

Twelve farmers who used skim-milk, meat-meal, and grain-meal spent on the average £4.3, and had £14.6 per pen as a return for farm feeds used (skim-milk, whey or buttermilk are included in the farm feeds). Pigs grew at the rate of 0.58 lb. of carcass daily, and every lb. of carcass cost 1.17d for meal used.

Six who used only skim-milk and meat-meal spent £3.7, and had £13.4 per pen for farm feeds. Pigs grew at 0.54 lb. of carcass daily, and meal costs per lb. of carcass were 1.06d.

Two who used buttermilk, meat-meal, and grain-meal spent £3.14, and had £13.2 to show for farm feeds. Pigs grew 0.53 lb. daily, and cost 1.08d per lb. for meals.

Three who used only buttermilk and meat-meal spent £3.2, and had £16 for farm feeds. Pigs grew 0.55 lb. daily, and cost 0.82d per lb. of carcass for meals.

Twenty who used whey, grain, and meat-meal spent £4.11 on bought feed, and had £13.6 to show for farm feed. Pigs grew 0.56 lb. daily, and meal costs were 1.31d per lb. of carcass.

Nine farmers who used only whey and meat-meal spent £3.11, and had £14.3 to show for farm feeds. Pigs grew 0.54 lb. daily, and meal costs were 1.00d for every lb. of carcass.

No comment can be made on the relative values of feeding meat-meal alone v. meat-meal with other grain-meal; the competition was not meant to test this point. The interesting thing is that when 10s to 15s is spent on meal on a pig worth 15s it can be made with ordinary farm foods into a baconer worth £3.15, even in the winter time. Growth is slow, but the cost of getting it is trivial.

These results are worth careful study, and should remove from most minds any doubt about the possibility and profitableness of keeping pigs going through the winter and having November bacon instead of September burials.

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# Veterinary Notes for the Farmer

## Discussions on First-Aid Measures

*Contributed by the Livestock Division*

## Lice Affecting Horses and Cattle

INQUIRIES have recently been received as to the treatment of lice on horses and cattle, and although it is early in the season for this trouble to occur a few words should not come amiss.

Lice, which are seen as tiny whitish objects moving among the hair, live by sucking blood from their host, causing irritation and loss of condition. The hair is rubbed off in places, and the skin often becomes damaged in the process and causes further irritation. The eggs are glued to the hairs as nits by the female, and for this reason any treatment needs to be repeated two or three times at three-day intervals in order to catch any lice hatching out from the eggs.

In the case of horses or cattle, infestation usually takes place in the winter, when the coat is long and the skin uncared for. Young and unthrifty animals are the type most frequently found affected, although ocasionally very fat, sluggish cattle may be included. Infection may be spread by the medium of stables, harness, grooming utensils, etc., although stock in good healthy condition are not so likely to harbour the parasite.

Treatment found to be very effective and handy for either horses or cattle is in the form of an emulsion which can be applied to the affected parts of the beast only, or, if the infestation is extensive, to say a quarter of the body at one time.

The emulsion is prepared as follows: Dissolve ½ lb. soap (soft soap for preference) in 1 gallon of boiling water and stir 1 pint of kerosene into this, emulsifying it thoroughly. The mixture is then made up to a total of 4 gallons with cold water.

The emulsion, when cold, may be applied with a brush in order to soak the hair thoroughly. The treatment should be repeated twice after intervals of three days, and care must be taken not to stand any animals in the sunshine just after treatment, as blistering of the skin may result.

Proper food, grooming, and exercise will help the animal to throw off the parasite, and should accompany the treatment.

## Lice on Pigs

PIGS do not thrive if they are subject to the continual irritation caused by lice. This applies particularly to all young pigs, but also to older fattening pigs.

The pig louse is a very large skin parasite, easily seen and comparatively easy to destroy. It belongs to the blood-sucking group, and causes a severe irritation and loss of condition. The young pigs frequently become infected from the mother unless steps have been taken to keep the older pigs, and also the pig-sties, in a clean condition and free from vermin.


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# FOOT ROT CONTROL

Foot-rot is a disease that is more easily prevented than cured, and on farms where it has previously occurred the flock should be treated as a preventive measure . . . Both for this purpose and also the most efficient control of affected sheep COOPER'S FOOT-ROT LIQUID, per medium of the foot-bath, should be used. Mixes instantly with cold water and does not make the hoof brittle . . . For individual treatment of bad cases COOPER'S FOOT-ROT OINTMENT proves an invaluable preparation, and is much in demand.

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A dressing along the back of the affected pig on one or more occasion, as required, will usually eradicate these pests. The common fuel or engine oil is quite suitable for the purpose, and occasionally waste oil or used engine oil, although dirty in the case of white pigs, proves quite effective as a lice-destroying agent.

A self-oiling arrangement has been used by many pig-keepers. The commonly used rubbing posts are wrapped round with sacking, which is periodically saturated with the oily dressing. In this way affected pigs rub against the posts and oil the parts where the parasites are causing the irritation. It it advisable to hand-dress young pigs in order to ensure that the parasites are all killed. Young pigs cannot be expected to make the best use of their food if lice are permitted to remain.

The kerosene-soap emulsion may be used for pigs if fuel oil is not available. It will be necessary to repeat the dressing on two or more occasions to ensure the complete eradication of the parasites.

# Ringworm in Calves

AMONG our domestic animals one of the skin diseases frequently met with is that known as ringworm. Although the disease may attack man or any of the domestic animals, it is most commonly seen among cattle, the condition being most prevalent among young stock, such as calves and yearlings and in cattle in poor condition.

Ringworm is a contagious disease. Animals become infected by direct contact with others suffering from the disease or indirectly from contaminated shelters, bedding, or posts against which infected animals have rubbed themselves. The spread among animals is gradual, but it is much more rapid if a number are confined in a single pen.

In affected animals patches of various sizes may make their appearance on any part of the skin. The most common area for the lesions to develop is on the skin around the eyes and ears, although similar patches are frequently seen on the skin of the neck. The surface of the skin on these patches is greyish in colour, and presents a dry, scaly appearance.

The cause of ringworm is a variety of fungi which lodges round the hair roots, the hairs becoming brittle and breaking off. The irritation brought about by this parasite produces a thickened and wrinkled condition of the skin on affected areas.

Many remedies are used in the treatment of ringworm, but before any of these are applied the skin should be thoroughly washed with warm water, soap, and washing soda, and the scabs scraped off. This is done with the object of allowing the dressing to come in contact with the casual parasite. After removal of the scabs each patch should be dressed with tincture of iodine, applied with a stiff brush, making sure that every patch is thoroughly

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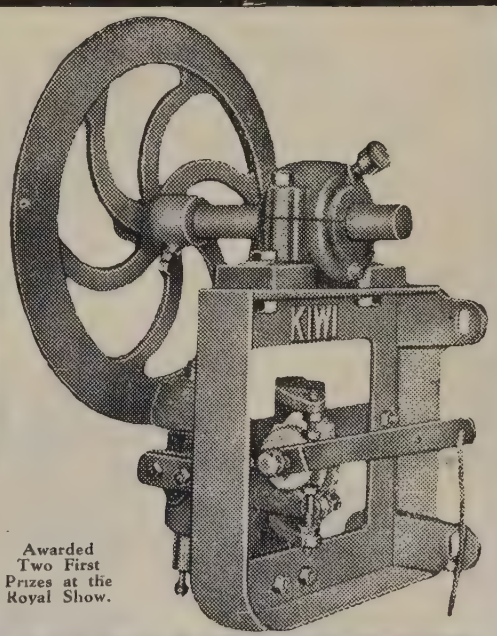

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dressed. The treatment should be repeated twice further at intervals of five days.

Immediately after handling animals affected with ringworm or dressing the skin the attendant should thoroughly wash and disinfect his hands, being careful that he does not touch any other part of his skin before this has been done. If this precaution is not carried out there is a considerable risk that he may contract the disease.

## Dosing of Dogs to Prevent Spread of Hydatids

ON THE licensing of dogs under the Dog Registration Amendment Act, 1937, all owners are supplied with a quantity of the approved remedy for the treatment and eradication of tapeworms from their dogs. The primary object of supplying the remedy is an endeavour to remove all tapeworms from dogs. Included in the tapeworms is the important one responsible for the spread of hydatid disease in human beings. Hydatid disease in cattle and sheep is also spread by this same tapeworm.

The responsible tapeworm is very small, and some knowledge as to its size is necessary to detect it. However, if not seen, it is not advisable to assume that the dogs are free from this dangerous parasite. It is much more important and necessary to assume that all dogs in the country are affected with the parasite and require to be dosed with the prescribed remedy at regular intervals.

There is an obligation on every owner of a dog to dose it with the prescribed remedy to prevent hydatid disease in some member of his family or in his farm stock. Every shepherd should dose his dogs now.

To prevent the dogs becoming reinfested with the dangerous tapeworm, offal should not be fed to dogs in a raw state. Boil this food before using it to feed dogs.

The use of the approved remedy will remove other tapeworms as well as that responsible for the spread of hydatid disease.

*Answers to Correspondents*

## Contagious Abortion in Dairy Cows

E.W. (PATUMAHOE):—

As a subscriber to your journal, I am submitting a problem that is most annoying, and I hope that the officers of the Livestock Division will be able to help me.

I have 18 two-year-old heifers (Jerseys) reared on the farm from tested cows. These heifers are affected with contagious abortion. So far, ten have slipped at about five months, and it appears that several more will also follow suit.

I have been on this farm six years, and every year have had a few slips and have always kept these isolated until all discharge has stopped. All calves and afterbirth have been buried, and no cow has had the bull for at least four months after slipping.

What I would like to know is: For how long will a cow that has slipped carry the abortion germ in her system? Could that cow, say two years after she has slipped, infect her calf through the blood stream or her own milk? What length of time would be required before the isolation paddock could be called clean?

I have also noticed that several of my heifers are either bulling before or after slipping. If a heifer in that state took the bull, would the bull become affected and transmit the disease to clean cows in, say, four months' time?

I might add that I have purchased no stock for more than two years, and that the heifers have been running on pasture topdressed with 3 cwt. of super. and 8 cwt. of lime.

I have also read that it is claimed that by injecting a certain substance the abortion germ can be killed. Has the Department any information to offer on this?

If these questions can be answered or any advice given that will enable me to check the disease I shall be more than pleased.

LIVESTOCK DIVISION:—

I note that you have been on your farm for some years, and that in spite of the precautions taken you are still troubled with cows and heifers slipping their calves. A history such as this indicates that you have in your herd what is commonly known as a "carrier," i.e., a cow that, as a result of being affected with abortion disease,

## Advisory Service on Veterinary Matters.

**Farmers are invited to submit inquiries connected with the health of their stock, and the replies will be published under this heading.**


# Pulpy Kidney Vaccine

(Entero-Toxaemia)

ORDERS for entero-toxaemia vaccine, made at the Commonwealth Serum Laboratories, Parkville, Victoria, are now being filled by the Animal Research Station, Wallaceville, where stocks are held for New Zealand requirements.

Farmers who are considering the vaccination of their ewes this season are requested to write at once for particulars and prices, if their order has not already been placed. Mention the number of ewes to be vaccinated, and also the date lambing will commence.

Particulars and order forms are obtainable from any Inspector of Stock, the Department of Agriculture, or from the Superintendent, Animal Research Station, Private Bag to Wallaceville, Wellington.

carries the germ in her system, and although she herself does not abort but carries her calf the full time, is yet capable of infecting the pastures at the time of calving and thereby infecting other animals grazing on them.

Cows such as this are likely to keep the disease alive on the farm for some years, so under the circumstances your best plan will be to have your herd tested for contagious abortion, as it is only by doing this that you can ascertain which animals are infected.

To enable you to take samples of blood for testing, I am sending a bulletin issued by this Department which will give you details as to how to take the samples and where to send them. The reply from the laboratory will indicate the cows which give a positive reaction, i.e., are affected with abortion disease, or negative, i.e., not infected. On receipt of this information you should, if at all convenient, separate the positive from the negative reactors, and at calving time treat the former as aborting cows even if they carry their calves the full time.

If you are unable to separate the positive from the negative reactors, you should keep the herd under strict observation and remove the reactors to a small paddock immediately they show any signs of aborting or even if they are calving normally. All these cows should be classed as dangerous and treated accordingly.

The paddock where the reactors abort or calve normally should be put under cultivation, as this is the only method likely to clean up infection. The length of time a paddock will remain infected will depend on circumstances. On bare paddocks and under direct sunlight the germs are soon destroyed, but if they are deposited at calving time on places where there is a certain amount of moisture and protection from the sun, such as paddocks where there are a lot of rushes or swampy patches, the germs are likely to persist and remain capable of infecting cattle for a period of probably five or six months.

The commonest method for cows or heifers to become infected with abortion disease is by grazing on paddocks which have been infected by animals that have aborted in them. It is also possible for a bull to carry infection from an infected cow to a clean one, but this can be guarded against by thoroughly irrigating the sheath of the bull after it has served an infected cow.

From time to time claims are made that the abortion bacillus can be destroyed in the animal's system by the injection of certain substances into the blood stream or even by dosing the infected animal. None of these claims will stand investigation, and little notice need be taken of them.

Vaccination against contagious abortion has been tried out on many occasions, and although some good results have been claimed, it has not made much headway in dairying countries. The main difficulty appears to be the fact that a dead vaccine is practically valueless in bringing about immunity. A live vaccine gives rather better results, but is very liable to create a "carrier," thereby not improving matters.

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# Farm Practice and Management

*Contributed by Officers of the Fields Division*

## Persistency of Red Clover

RED clover is not regarded as a pasture plant of lasting ability, but under conditions of not too close and consistent grazing it remains for a considerable time. In general, and under ordinary farming conditions, its permanency is from three to four years, and under heavy grazing conditions little will be found after two years.

The accompanying illustrations show a rejuvenation of red clover which was sown twenty years ago. Manurial treatment (if any) at the time of seeding was no doubt light, due to the distance of the farm from the railhead and to bad roads. For a number of years the pasture has been dominant browntop with isolated plants of red clover of poor vigour, and there has also been an absence of white clover.

**Fig. 1.—A twenty-year-old browntop pasture. The clover growth on the left is the result of a topdressing of 2 cwt. of superphosphate per acre. Right: not topdressed, no clover.**

*[C. S. Dalgliesh, photo.*

**Fig. 2.—Twenty-year-old browntop pasture with no topdressing in the foreground. The clover growth in the background is a result of a topdressing of 2 cwt. of superphosphate per acre.**

*[C. S. Dalgliesh, photo.*

Two years ago the property changed hands, and the browntop pasture was top-dressed with 2 cwt. of superphosphate per acre. There has been a remarkable response in development of white and red clover. Following the top-dressing of a poor pasture with a phosphatic fertiliser it is a common result to obtain a good response in white clover growth, but this is not so with red clover.

Fig. 1 shows white and red clover growth on the left as a result of a 2 cwt. top-dressing of superphosphate per acre on the old browntop pasture as shown on the right.

Fig. 2 shows browntop pasture without top-dressing in the foreground, and clover growth in the background as a result of topdressing.

*—C. S. DALGLIESH, Fields Instructor, Rotorua.*

White clover will not establish in a loose seed bed such as this.

Type of pasture to expect from a poorly prepared seed bed.

# Consolidate the Seed Bed For Successful Pasture Establishment

WHEN sowing grass seed the password should be "consolidate the seed bed." This means that not only should the surface be firm, but the seed bed should be consolidated from the bottom up.

To obtain this condition, especially with light soils, consolidation should be started, by rolling with a cambridge roller on the furrow in the same direction as the ploughing. After working down in the usual manner the seed bed should receive another rolling before sowing. This amount of rolling may seem excessive—and it is for heavy clay soils, which can be consolidated sufficiently with one or two strokes of the roller—but for light soils such as the volcanic and sand soils found in North Auckland this amount of rolling is required for successful pasture establishment.

There is a scarcity of rollers in North Auckland, and consequently quite large areas of new pasture are sown each year without the seed bed being finally finished by this valuable implement. Unsatisfactory and disappointing establishment is generally the result on these areas, lack of consolidation being the cause in most cases.

## *Why It Is Necessary*

It is often asked why it is necessary to place such importance on consolidation and why pastures fail to establish satisfactorily when this condition is not present in the seed bed. The answer is that early white clover establishment is the secret to successful pasture establishment, and that white clover seed will not strike in a loose seed bed. On a well-prepared seed bed

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Consolidation and good seed give results such as this.

which is fine, moist, and firm, however, white clover establishes rapidly and ensures the successful establishment and maintenance of the other grass species sown with the white clover.

Consolidation is important for successful pasture establishment, but consolidation alone will not give good pastures. It is simply one of the three following factors which are all-important to bring success:—

(1) Prepare a fine, moist consolidated seed bed.

(2) Sow early with certified strains of grass and clover seeds.

(3) Use adequate supplies of phosphatic fertiliser and lime where needed.

## *Result of Neglect*

Neglect in carrying out these three factors thoroughly will give disappointing results. The procedure recommended appears costly, but there are no short cuts or cheap methods known that will give first-class pastures. If finance is short, do half the area thoroughly and get good pasture rather than attempt to sow large areas without adequate preparation and good seed and fertiliser. This appears cheaper at the time, but is ultimately much more costly, as the work of cultivation has to be done again and more seed and fertiliser have to be purchased, while little or no feed is produced from pastures established by cheap methods.

Now that primary production is so important, it is essential that no wastage in pasture establishment should occur. If farmers sow good seed on a consolidated seed bed with liberal dressings of phosphate and lime they will be achieving this object and also improving their position from a cash point of view.

*—E. B. GLANVILLE, Instructor in Agriculture, Whangarei.*


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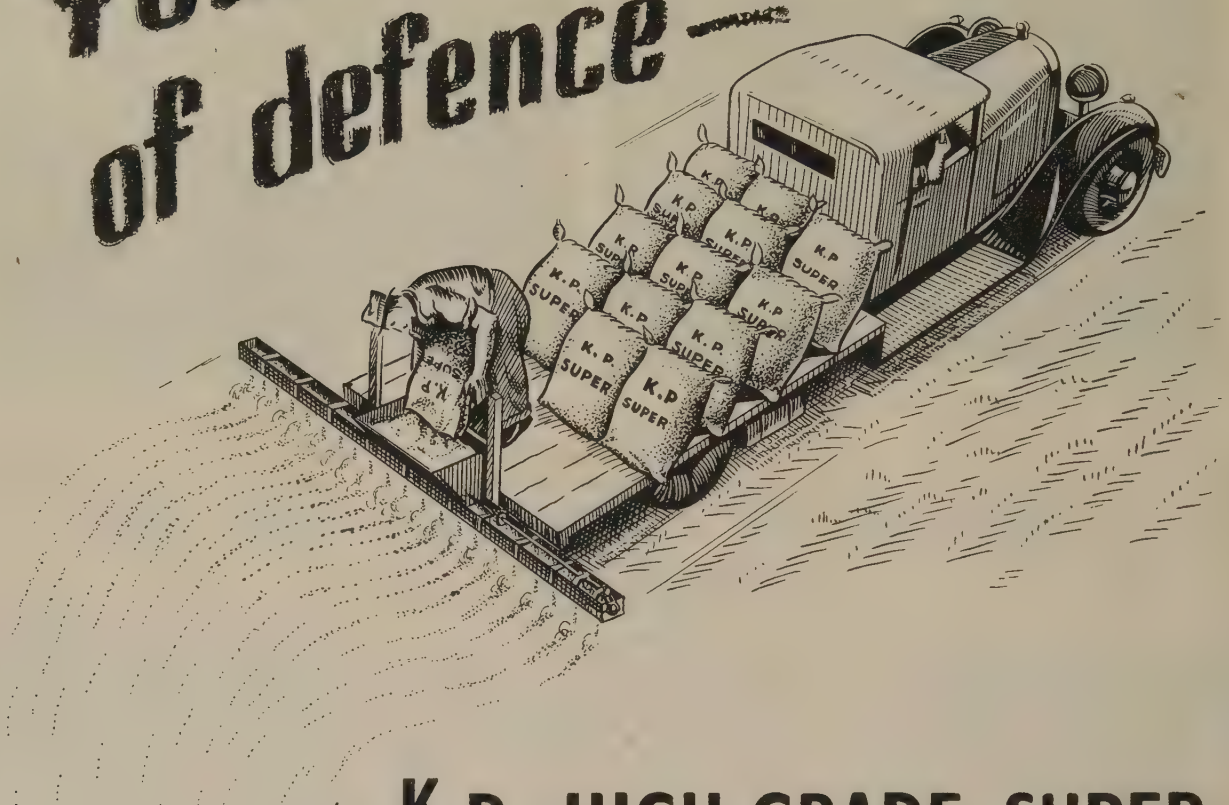


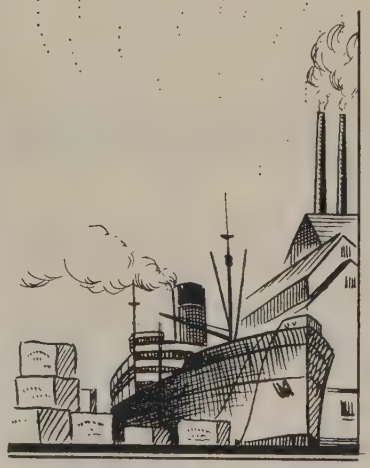

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# Reclaiming Hill Country From Bracken Fern and Hard Fern

EVERY farmer has been asked to increase his production wherever possible. In the Southern King Country—and in many other high rainfall districts, for that matter—there are large areas of country which if cleared of fern, sown, and top-dressed, would make excellent hill country pastures and present perhaps the greatest opportunity to increase production with a small outlay.

Much of this country has in past years been sown in grass, but, due to inefficient management, has reverted to the first stage of its natural cover (hard fern and bracken fern).

## *Increased Profit*

In the coming winter months when farmers are feeding out their hay, such areas offer a wonderful opportunity to farmers to increase the productive acreage of their farms, and also to make an increased profit at the cost of the labour which has to be used at ordinary times plus the extra labour involved in feeding out on the more difficult country.

The first requirement for this work is a sufficient number of heavy run cattle and sufficient hay to winter them. Fences on the area should be repaired, and the cattle turned out on the block for the winter. The hay is fed out on the fern, but it is essential that all parts of the block have hay fed on them during the winter. Special attention should be paid to hard fern patches and extra hay fed on them.

This practice has been carried out for a number of years by several farmers in the Southern King Country, and all have successfully reclaimed areas of fern country.

## *On Steeper Country*

On the steeper country one farmer has found it necessary to bale all his hay and pack the bales on horses up to the ridges. Such areas are more costly than those where a sledge can be used, but the land reclaimed has more than paid for the cost of labour spent on the winter feeding.

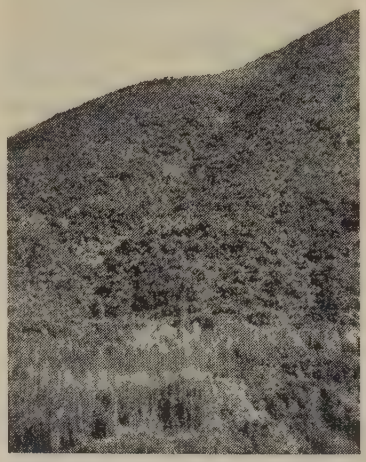
After the first winter it will be found that a fair proportion of the bracken has been killed and a fair amount of grass, chiefly from the seeds shed by the hay, has established, and the block should carry a fair number of cattle and sheep over the summer.

During the late spring and early summer after crushing the fern it is good practice to stock the crushed block heavily with wethers or dry sheep. It is at this period that the bracken fern begins growth, and as sheep readily eat the young fern in the curl stage, most of the young fronds will be eaten and the revival of the fern checked to a great extent. Dry sheep are much better than cattle or ewes for this work, as they travel further from water than cattle and are more active than breeding ewes.

## *Topdressing*

The following autumn the block should be top-dressed with 1 cwt. to 2 cwt. of superphosphate per acre—this manure gives best results in the Southern King Country—and 10 lb. of certified perennial ryegrass and 2 lb. of certified white clover should be mixed with the fertiliser. In the second winter any fern which has revived should be again crushed with cattle and more hay fed out on the block.

An essential part of farm management on country reclaimed by this method, and also on any country which is inclined to revert to bracken fern, is to run sufficient cattle. The usual ratio of sheep to cattle used by successful farmer is about one full-grown cattle beast to every five sheep.



*A hill covered with bracken fern suitable for clearing with hay-fed cattle.*

*—W. T. BROWN, Fields Instructor, Taumarunui.*

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# Stock Mean Fertility

A PHENOMENON well known to everyone who is familiar with second-class country is illustrated by Fig. 1. A new sheep yard is erected on a poor, open sward (as on the left) consisting of danthonia and brown-top, with perhaps a little dogstail and an occasional ryegrass plant. In a year or two the area enclosed by the yard produces a dense, dark-green, vigorous sward of pure ryegrass. In almost no time the nitrogen from stock droppings has brought about this transformation.

There is nothing fundamentally infertile about this type of country. Any practice that increases the number of stock carried on a given area will also mean that those extra stock will improve the fertility of the soil. In other words, while we all realise that improved fertility means more feed, many overlook the fact that more feed also means more fertility; or, to be more precise, improvement in fertility other than nitrogen can lead to improved fertility in terms of nitrogen.

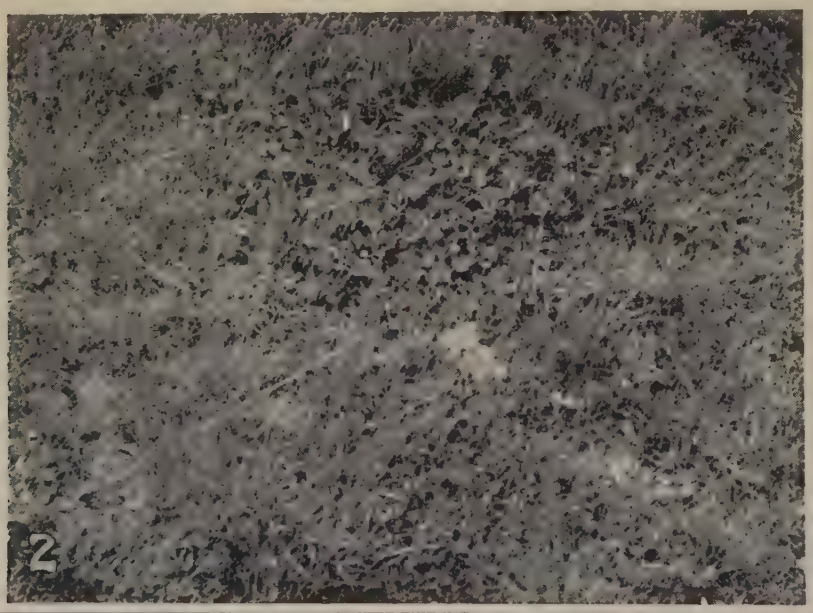

Fig. 2 shows strong but still scattered subterranean clover plants on some of this poor country. It is clover that provides the key to the above statement; clover is independent of soil nitrogen, but must have readily available phosphate. By its direct effect on the soil, and by providing feed convertible into stock manure, clover builds up the nitrogen fertiltiy of poor soils.

Of the clovers suited for surface sowing on poor, dry hills, subterranean clover is definitely the best. Suckling clover is also useful, but has a shorter growing life than subterranean clover. Its cheapness, however, can justify its use as a pioneer clover if it is not already present.

Towards the end of February is the time to sow up to 4 lb. of subterranean clover—and perhaps 1 lb. of suckling clover—with 2 cwt. per acre of superphosphate as the most effective method of quickly increasing prduction on this type of country.

*—N. LAMONT, Instructor in Agriculture, Masterton.*

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# The Orchard and Vineyard

*Contributed by the Horticulture Division*

## Orchard Notes

## Pruning Apple and Pear Trees

ORCHARDISTS realise the importance of pruning in shaping developing fruit trees and in influencing cropping and quality of fruit in bearing apple and pear trees. To do what is really necessary, all the available time during the dormant season could be profitably used on this work and a more detailed treatment of fruiting wood undertaken than is usually attempted.

There is always the possiblity, through various circumstances, that the whole of the pruning programme may not be completed or may have to be so modified to be finished in time that little benefit results from the work done. It is wise, therefore, to begin with the most essential work and to do it thoroughly. The large pear trees may be dealt with first, leaving, if necessary, some blocks of apple trees which are certain to produce a normal to heavy crop and of only moderate growth, and relying on fruit-thinning to retrieve the position.

### *Pruning Pear Trees*

Pear trees usually produce such prolific new growth that, unless the bulk of growth is removed and the whole tree kept very open, cropping cannot be depended on. It is rather a tedious job, but may be greatly assisted by good ladder equipment and suitable tools. To leave the work to the last and perhaps be obliged to modify the intended pruning may easily result in a crop failure.

### *Spacing Laterals*

Crowded limbs should be removed first by making clean saw cuts at the base. Horizontal fruiting arms arising from the main limbs require ample spacing so that, by good penetration of light towards their base, fruiting will be encouraged along their whole length instead of only towards the terminals, as in a crowded tree. In large trees the vertical spacing of such parts should be at least 3 ft.

Extension should be limited according to the space between rows, and any interlacing between adjacent rows should be avoided. Such horizontal arms should be shortened sufficiently to allow each tree to stand out individually from its neighbours. Most of the new growth consists of vertical shoots arising from horizontal arms, all of which should be removed by cutting close to the base. The few new shoots with a horizontal or downward tendency may be retained to provide new fruiting wood to replace the older and worn-out spur system.

The top of the tree, particularly, should be kept well thinned out by avoiding any duplications of existing leaders. If trees become too tall for economical working a reduction in height should be made by cutting back the main branches several feet to a point where a suitable shoot which may take up the lead has arisen.

### *Pruning Apple Trees*

Apple trees vary in growth according to variety, age, and previous treatment, and cropping varies accordingly. Up to a certain period in the life of a fruit tree growth is usually abundant and fruiting is relatively poor, during which time the tree is expanding in size.

Pruning over such a period is designed to regulate and direct growth in building a framework capable of carrying the weight of fruit subsequently produced. In the building process expansion must be rapid or slow in relative proportion to the vigour displayed. Mature trees producing regularly make moderate new growth, and the pruning should be designed to maintain an even amount. Stimulation to heavy growth by heavy pruning reduces the cropping capacity, and often results in excessively large fruit of poorer keeping quality and less market value.

On the other hand, very light pruning or no pruning at all results in stagnation of growth, an over-production of fruit spurs, and a consequent preponderance of small fruit and irregular cropping. These two extremes should be studiously avoided.

When mature trees have been stimulated to heavy growth through pruning —and perhaps an application of nitrogenous fertilisers—the treatment should consist of a general thinning out of the annual growths, leaving the selected new shoots at least three-quarter length, and with only a slight reduction in lighter fruiting wood and multiple fruit spurs. This treatment adds to the length of laterals and fruiting arms, and, if continued, would produce a rather straggling tree. However, once growth has been controlled after increasing the bearing surface, a gradual shortening-in of such extensions may be made.

Trees which have produced little or no new growth through light pruning and excessive cropping usually carry an abundance of weak fruiting wood and multiple spurs. This material may be thinned out quite heavily without reducing the crop below a reasonable level, and should result in renewed growth arising from the stronger fruit spurs in an upright or terminal position. Sturmer apples quite frequently get into a condition when spur reduction is very necessary.

### *Terminal Bearing*

Some varieties, such as Rome Beauty, do not produce fruit spurs so readily, but increase their cropping capacity by fruiting on the terminals of laterals which continue to subdivide. Ultimately, fruit spurs will form at points along the length of long laterals which have been bent down by the weight of terminal fruits. Until this stage is reached and cropping is really heavy and fruit size is reduced to a desirable point, lateral growth should be allowed to remain intact. Later, a thinning out and shortening in may be undertaken.

Granny Smith has a similar tendency, and may be treated lightly in the earlier years, depending for a good part of the crop on terminal fruiting.

*—N. J. ADAMSON, District Supervisor, Nelson.*

## *Citrus Notes*

# Shelter and Preparation of Soil

THE months of June, July and August are generally suitable for the planting of citrus trees if the necessary preparations have been made. Before planting, the area should be adequately sheltered and the soil thoroughly prepared. These two factors are vital to the successful establishment of a citrus grove. Because the ground has been ploughed and a few hedges have been planted a season or more does not necessarily mean that cultivation and shelter have received sufficient attention.

In planning the shelter of a five-acre orchard, the following suggestions are made. Firstly, the lie of the land should be a gentle slope to the north, so that the trees will receive the maximum sunshine. To the south, south-east, and south-west, dense high shelter is necessary; therefore, plant two lines of *Pinus radiata* and one of *Cupressus lawsoniana, Bambusa vulgaris,* or *Acmena floribunda,* the object being the establishment of a high shelter of quick-growing trees and a lower and slower-growing one to prevent any draught underneath. On the northerly boundary lower shelters such as *Cupressus lawsoniana, Bambusa vulgaris, Acmena floribunda,* or *Hakea*


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*saligna* should prove suitable. Subdividing the area should be done by another three or four rows of the *Hakea* or bamboo.

*Albizzia lopantha* is generally more trouble than it is worth. It certainly grows quickly in certain localities, but no sooner is it of value than it tends to outgrow its value and has to be topped or removed.

If the area chosen is completely devoid of shelter, five years of shelter growth is advisable before citrus trees should be planted. If there are shelter trees in the vicinity which break the force of the wind, three years may be sufficient between the date of planting the shelter trees and the planting of citrus trees.

While the shelter is becoming established is the time to prepare the orchard site, and the better the preparation, the better the trees will respond after planting. Many of the trees of from 10 to 15 years of age look only half their age in size and productivity, largely because of the unsuitable conditions in which they were planted out.

The preparation of the soil must be thorough. In the first year, clear off the scrub and any loose surface stone. Plough, and allow to lie fallow until the autumn, when a crop of blue lupins or other leguminous cover crop is sown and later turned in. This can be repeated for a second year, if desired, so that all noxious weeds are eradicated and the soil tilth improved.

The breaking up of the subsoil should be given attention the winter before planting the citrus trees. This does not mean bringing the subsoil to the surface, but it does mean the breaking up of any hard pan within 9in of the surface. This can be done with a pan-buster, or by double ploughing.

In double ploughing, the first furrow should be turned as usual to a depth of 9in, and the second plough should follow, without mould-board, so that the share breaks up the subsoil without raising it. Such a system of preparation aerates the soil, improves drainage, minimises surface scouring, and greatly assists in the establishment of the root system of the citrus tree at a depth where it will suffer less from drought and where it will also firmly anchor the tree.

*—A. M. W. GREIG, Citriculturist, Auckland.*

## *Cool Storage Notes*

# Maintaining Fruit in Prime Condition

THE harvesting of the apple crop was completed early in May. The seasonal conditions which prevailed while the fruit was maturing on the trees were favourable to the production of fruit of excellent colour, quality, and condition for holding in cool storage to regulate market supplies during the remainder of the year. The success of the out-turn of this fruit after a period in cool storage will now rest largely with those who are responsible for the manipulation of the refrigeration equipment.

In order to maintain the fruit in as prime a condition as possible, the different varieties of apples must be held at the most suitable temperatures for each variety. Fluctuations of these temperatures should be avoided. The relative humidity of the atmosphere of cool storage chambers should be maintained at between 85 per cent. and 90 per cent., the saturation point for fruit storage temperatures. Regular attention to the blowing out of the chambers is now essential.

The marketing of cool storage stocks should be carried out systematically by a careful inspection and the elimination of fruit that has developed signs of deterioration, such as bitter pit, flesh collapse, wilt, fungal rotting, discolouration, etc. The signs of the development of this discolouration are generally apparent in time to avoid repacking and loss. The state of the maturity of the fruit when it was placed in cool storage will be a good indication as to the length of its cool storage life.

When deterioration is detected in any variety the large sizes should be marketed first, as losses will be greater if they are held.

Provision is necessary in the system of stickering fruit cases for the segregation of fruit from orchards where conditions have been such as to render the fruit unsuitable for long storage.

Fruit to be held for long storage should be selected from trees which are carrying a normal crop, and not from trees with light crops or from strong-growing grafts. The pruning system and the manurial programme, combined with the soil conditions, have an effect on the keeping quality of fruit.

There is no substitute for experience when dealing with fruit. The behaviour of the different varieties under refrigeration and their individual requirements and storage limitations have to be closely studied if a good out-turn of the fruit held in cool storage is to be obtained.

*—A. POWELL, Cool Storage Officer, Wellington.*

## *Tobacco Notes*

# Cleaning the Land

TOBACCO may be grown on the same land continuously for an almost indefinite period without the crop deteriorating either in quantity, quality, or soundness so long as the area used is kept thoroughly clean and in good heart.

As soon as harvesting is completed all the stalks should be pulled out by hand or by the plough and carted off the plot and stacked until sufficiently dry to burn. The land should then be ploughed to a depth of 4 to 5 inches and given a top-dressing of agricultural lime at the rate of 10 cwt. to the acre, and then allowed to fallow during the winter.

Generally speaking, the growing and ripening period of a crop of tobacco in New Zealand is such that there is no time to sow a cover crop. However, when an early season is experienced and the harvesting is completed soon enough, a cover crop of lupins, mustard or oats should be sown as soon as the tobacco stalks have been removed. To be of any value, the cover crops should not be sown later than the middle of May, and should be ploughed in about the end of September.

*—U. A. YELDHAM, Department of Agriculture, Wellington.*

# The Home Garden

## *Vegetables, Small Fruits and Flowers*

# When Seeds Fail To Grow

F. SYDENHAM, Assistant Horticulturist, Wellington.

NUMEROUS reports are received each season of the difficulty experienced by home gardeners in establishing certain crops. The condition of the seed bed may not be suitable, the method of planting may be at fault, or the ground may be too richly supplied with plant food. These three factors have an important bearing on the germination of seeds. In many instances the seedsman is unjustly accused of supplying inferior seed.

### *Condition of Seed Bed*

The soil should be so prepared that when the seed is sown and covered it should find a suitable medium in which to develop. The soil should not be so finely worked as to resemble a powder, nor should it be left in lumpy condition. A suitable granular condition occurs at a stage between these two extremes.

This condition can be obtained only when the soil is not wet from recent rains, and may not be capable of production on a certain Saturday afternoon when it would be convenient to sow seeds. Where the soil is too moist to handle it is advisable to delay planting until it is in suitable condition.

### *Method of Planting*

The shallower that small seeds can be sown, provided they can be kept moist, the more satisfactory will be their development. Early in the spring, when frequent showers occur, they may be sown in loose soil and lightly covered. As the season advances, however, and showers become less frequent, the seed bed should be firmed lightly so that moisture will rise through the soil. At the same time the seed should be covered with a slightly greater depth of soil, so that although the surface layers may dry out the seed will remain moist. Later in the season there is less likelihood of the surface soil caking and preventing the shoot from appearing.

Carrots appear to be a crop which suffers most when the seed is sown in soil which is not in a suitable condition or is covered too deeply. There are methods of covering the seeds with material, such as rotted farm manure or compost, rotted pine needles, and sand, which do not cake and which are claimed to produce a good strike.

The use of these devices may be possible on a small scale, but on a larger scale the method is not practicable. Experienced growers rely on planting when the soil is in correct condition, and seldom meet with disappointments.

### *Availability of Plant Foods*

So that the young seedling may make the most satisfactory progress, the soil, and especially that close to the seed, should contain adequate supplies of available plant food. It is with this object that a dressing of artificial fertiliser is applied at the time of sowing, and is concentrated in the drill.

Too free a use of quick-acting fertilisers with certain seeds will do more harm than good. Injury is most likely to occur to seeds of cruciferous crops (swedes, cabbages, etc.). Too great a concentration of plant food either destroys the germ of the seed or destroys the young plant as it appears from the seed. A light dusting of fertiliser with the seed is an advantage, and any additional required may be applied as a broadcast dressing before or after sowing.

The amount of available plant food in the soil after a green crop has been dug under is frequently too high for the development of the seedling. Such a green crop should be dug under four

### Seasonal Don'ts

*Don't*

**apply artificial manures with the seeds of carrots, parsnips and long beetroot. In the article on this page it is suggested that a light dressing of such manures stimulates the young seedlings into active growth. With roots that are liable to fork not only does it stimulate the tap root, but also the secondary roots. A result of this—a parsnip—is shown in the following illustration. The artificial dressing**

**should be broadcast over the area that is to be planted.**

*Don't*

**apply farm manure to these root crops for the same reason. It may be applied to previous crops when sufficient fertility will remain in the soil to produce a good crop.**

# What To Do In The Garden Next Month

## Summary of Operations during July

### VEGETABLE SECTION.

SEED TO SOW UNDER GLASS

**Celery; tomato (early in the month for the unheated glasshouse); spring cabbage (Golden Acre and Flower of Spring); lettuce.**

SEEDLINGS TO TRANSPLANT AND PLANTS TO SET

**Onions, where the ground is in suitable condition. The roots only, and not the bulbs, should be placed in the ground; shallots.**

PERENNIAL CROPS

**Plant rhubarb crowns. The growing of asparagus will be discussed next month, which is a suitable time for planting.**

NOTES FOR WARM DISTRICTS

**Transplant lettuce. Sow onion seed to develop without transplanting. Sow at the rate of 12-14 seeds per foot.**

CROPS IN SEASON

**The month in brackets represents the month of sowing the seed.**

**Salads.—Endive (Mar.); celery (Sept.).**

**Greens.—Brussels sprouts (Sept.); cauliflower; winter cabbage; savoy cabbage; borecole, broccoli; silver beet (all in Oct.); spinach (Apr.).**

**Roots in the Ground.—Beetroot (Globes sown Feb.-Mar. in warm districts); artichokes (Oct. tubers); salsify (Oct.); swedes (Nov. and Feb.); celeriac (Sept.); parsnips (Sept. and Dec.).**

CROPS IN STORE

**Beetroot; carots;; kumeras; pumpkins; onions potatoes; shallots.**

GENERAL WORK

**Stake autumn-sown peas, if this is not already done.**
**Set seed potatoes of the early crop in trays in a light shed to sprout. There is no need to sprout seed of the main crop. Place orders for seeds. Look over stored crops and remove any showing signs of decay**
**Dig under cover crops as soon as they are ready in preparation of the land for spring sowing and planting.**

### SMALL FRUIT SECTION.

**Plant Cape gooseberry seed under glass. The common small-fruited variety is the most suitable. The larger variety, Golden Nugget, produces a jam resembling green tomato jam.**
**The planting of currants, raspberries, gooseberries, and loganberries should be continued.**
**The pruning of bush fruits should be completed.**
**Apply the spray of winter oil (1 in 25 water) in control of white scale of raspberries and loganberries.**

### FLOWER SECTION.

**In warm situations an early planting of gladioli may be made.**
**Take cuttings of chrysanthemums.**
**Sow seed under glass for spring planting.**
**Plant roses and hardy shrubs and trees.**
**Delay pruning of roses until August and September, but complete the pruning suggested last month.**

### GLASSHOUSE SECTION.

**See article on "Glasshouse Tomato-growing" in this issue.**
**Plant tomato seedlings in the heated house, and in the unheated house in warm localities towards the end of the month.**

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to six weeks before sowing the seed so that free ammonia given off by the decaying vegetation may be fixed in the soil.

An illuminating example of the effects of an over-supply of ammonia in the soil following the digging under of a green cover crop was observed in the Hutt Valley recently. An area of ground, about a third of which was carrying the remnants of a crop of lettuce, was ploughed and carrots sown. The crop on the portion where the lettuce was growing was a complete failure, but that on the other portions was entirely satisfactory.

## *Random Notes*

### Pea Seed Treatment

GOOD-QUALITY garden pea seed germinates satisfactorily where soil conditions are warm and not too moist. Where the conditions are not the most favourable, germination is slow, and the germinating seed may be attacked by soil fungi. The damage in this respect may be reduced to a large extent if the seed is dusted with the organic mercurial dusts. The treatment is simple.

Take a clean tin which can be made airtight. Put a small quantity of the dust in the tin, and follow this with the quantity of pea seed that is to be sown. Shake the tin vigorously. A small quantity of the dust will adhere to the seed and will remain on the seed when taken from the tin and planted. The dust that has not been used may be left in the tin to treat future lots of seed.

These dusts are poisonous, and care should be taken in handling them. About 1½ oz. is sufficient to treat 50 lb. of seed. A level teaspoonful will be adequate to place in a tin where only 1 lb. to 2 lb. of seed is to be treated at a time, and most of this quantity will be left in the tin when the seed is removed.

### Soil for Seed Boxes

THE seed box mixture which will be required in the very near future should be prepared promptly. It should consist of equal parts of soil and leaf-mould (or other rotted farm manure) and a preparation of sharp sand where the soil to be used is heavy.

These ingredients should be mixed thoroughly and passed through a ½in mesh sieve. Thereafter, if protection from the weather is afforded and several turnings are made, the mixture should be in ideal condition for use.

The inclusion of ½lb. of superphosphate to the cubic yard several days before sowing encourages a stronger root development of the seedlings.

# APIARY NOTES

*Contributed by Officers of the Horticulture Division*

## Precautions for the Winter Months

BEEKEEPERS will realise that, to get the most out of their investments in stocks, equipment, and labour, special care must be taken at all times to ensure the comfort of the bees. No matter how expensive or modern the honey house and apiary equipment may be, the comfort of the bees under all weather conditions is of paramount importance.

At this time of the year nectar secretion is at a standstill, and there is sufficient chill in the air to keep the bees reasonably quiet. Brood rearing has almost completely ceased in most localities, hive strength has diminished considerably, and the bees have given up the active life of summer. It is now time for bee-keepers to complete the work advised in last month's apiary notes, giving special care to the protection of all hives from strong winds and the storage of extracting combs.

### *Bees Generate Heat*

Bees do not hibernate, but live in a semi-dormant condition during the winter in cold climates. It is therefore necessary for them to generate heat, which they do according to their requirements by the consumption of stores and the expenditure of bodily energy.

During the active season the bees spread over the entire interior of the hive, but when winter comes they gather in a compact cluster to conserve heat and to protect the queen in the centre. For the future welfare of the colony the queen must be kept warm and comfortable at all costs.

The cluster is usually in the centre of the food mass and, if possible, reaches to the top of the hive, next to the mat, for the economical conservation of heat. The bees on the outside of the cluster form a compact wall, while those on the inside are in loose formation. Those in the centre must carry on muscular activity to generate sufficient heat to keep the bees from chilling. An even balance in the condition of the bees is kept by the change of places at frequent intervals.

It will be noticed if the winter cluster is suddenly broken up that the bees occupying the centre portion are active and very much alive, while those occupying the outside take a long time to break up and are sluggish in their movements.

### *Protection from Winds*

Where hives are placed in exposed positions, cold, pentrating winds enter hive entrances and all openings caused by ill-fitting or badly-constructed appliances. It is, of course, not possible to provide the bees with fixed temperatures, nor do they require it. Provided the hives are reasonably sheltered and all hive parts rain-proof and close-fitting, the bees are quite capable of generating sufficient heat within the winter cluster and retaining the correct temperature under changing weather conditions.

In all apiaries where these precautions are not taken colonies open up weak in the spring and low in stores. Also, the majority of bees have dark-tipped, shiny bodies, indicating worry, extra work, and loss of vitality through overwork in attempting to keep up the normal temperature within the cluster during the winter months. Heaps of dead bees will be found either on the floor board or outside the main entrance, and the heavy mortality rate will continue.

This condition is known as spring dwindling, and has a disastrous effect on the honey crop returns. It can be avoided only by strict attention to shelter and close-fitting hives placed in dry surroundings.

### *Reasonable Care*

Bee-keepers should not go to extremes. All the bees require is reasonable care for successful wintering. Any attempt at providing artificial warmth would induce brood rearing at a time when such activity is not desirable. This would cause a heavy consumption of stores that could be ill afforded, and would not allow the queens the rest they require if they are to be of service throughout the following honey season.

### *Stores Required*

The survival of the colonies in good shape during the winter and early spring months before nectar is available in sufficient quantity depends not only on adequate shelter, but also on the amount of stores left at the close of the season.

At the time of writing the majority of bee-keepers will have taken their share of the honey harvest. The amount of honey to be left for the bees to winter on depends largely upon locality. In districts where early spring nectar is available, either from mixed bush sources, heath, or manuka, a little less honey is required.

In no case, however, should a colony be left with less than 30lb. A safe plan is to leave not less than 40lb. Abundance of stores is essential if winter losses are to be avoided altogether.

### *Total N.Z. Requirements*

It is interesting to note the amount of honey necessary to winter the bees kept in registered apiaries throughout New Zealand. At March 31 there were 122,854 hives registered in this country. While there is no method by which the exact amount can be measured, because of varying conditions in separate localities, a conservative estimate of the average amount of

honey required by each colony between seasons is approximately 40lb.

Accepting this figure as being fairly accurate, the bees in registered apiaries throughout New Zealand require more than 2,100 tons of honey during the period when there is no nectar available in the fields.

Far too many bee-keepers depend on some means of making up the store requirements of their bees by artificial feeding. Early spring feeding is not good practice, as it wears out the bees and tends to dissipate colony heat, which is so necessary during the early brood rearing period in cold climates. On the other hand, early spring feeding in temperate climates induces the bees to build up far too early in the season, resulting in early swarms, worn-out queens, and considerably reduced honey crop returns during normal seasons.

## *Care of Extracting Combs*

Apart from his bees, the bee-keeper's most valuable asset is the extracting combs, and special care must be taken to protect them from rats and mice, mould, and wax moths at all times when they are off the hives.

To protect them from rats and mice where they are stored in supers in open sheds, place a queen-excluder at the top and bottom of each tier. To prevent mould, store the combs dry, space them eight or nine to each super, and keep them dry.

In all districts where wax moths are prevalent, especially the large moth (*Galleria mellonella*), the only sure method of control is to keep the flying moths away from the supers and combs. To do this it is necessary to provide a moth-proof room which can be completely closed for fumigating purposes, and is provided with shutters over wire screen windows which can be opened at frequent intervals to allow a free and complete circulation of fresh air; this is desirable to keep the combs fresh and sweet.

## *Moths Fly At Night*

Bee-keepers should note that the wax moths fly at night, that the females lay their eggs at night, and that the eggs are laid in crevices about the hive and supers where the newly-hatched larvae will find easy access to the combs. These moths are not attracted at night by artificial light, and they shun the daylight and rest during the daytime.

## *Stacking the Supers*

The supers may be stacked as high as the ceiling will allow in rows on floor boards with the entrance closed and the top covered by hive lids. If floor boards are not available or they take up too much room, anything that will fit tightly and allow access to the bottom super will do. This arrangement applies to outdoor or open shed storage, and allows simple fumigation by the use of calcium cyanide. A level dessertspoonful should be placed on paper or scattered inside and underneath the bottom bars of the frames in the bottom super, which is immediately closed.

If only a small room is available and it is desired to fumigate infected combs in small batches, the supers containing the combs may be placed criss-cross in tiers and a quantity of calcium cyanide placed about the room on sheets of paper.

Calcium cyanide powder generates a deadly gas; therefore, the operator should leave the building as soon as possible and close all doors and windows tightly for about 24 hours, after which a free circulation of air should be allowed before again entering the building.

## *Special Warning*

Bee-keepers are warned against the excessive use of strong-smelling fumigants of any kind for the protection of bee combs in storage against wax moths, especially if the combs are damp or during humid weather conditions.

Among other preparations paradichlorbenzene has been recommended for this work. Although the gas generated by this preparation is not unpleasant to smell and is non-injurious, it will very seriously taint bee combs if used excessively, and will have a very detrimental effect on the flavour of the honey stored in them the following season.

*—T. S. WINTER, Chief Honey Grader, Auckland.*

## Book Review

### "The Grasslands of the Falkland Islands"

*by*

WILLIAM DAVIES, M.Sc.,
Senior Grassland Investigator, Welsh Plant Breeding Station, Aberystwyth, Wales.

THIS book is a concise ecological survey of the Falkland Islands. These Islands are treeless, the natural climax vegetation being grassland of one form or another. The tussock form predominates, interspersed with low heath-like shrubs, the ecological equivalent of the British heather. Around the settlements, pastures consisting of British grasses of second-rate species are established. The Islands are zoned floristically according to aspect, soil and stocking intensity. The hard camps of the ridges, the more fertile bottoms and the widespread soft camps (peaty formations) at low and high elevations carry their own particular plant community. Deep peat or undecomposed impervious dense surface mat of humus comprises the major types, and one of the main agronomic problems of the Islands is wrapped up in the decomposition of this peat or surface peaty mat layers.

Grass is the chief and almost only agricultural crop, and it is wholly likely that grassland will remain the mainstay of agriculture in the country. For pasture improvement emphasis is placed on the value of the introduction of legumes into the sward, and white clover is of paramount importance in any developmental work. Suckling clover is also of value, and *Lotus major* of distinct promise, particularly for the deep peaty areas.

Among the grasses, Yorkshire fog is of outstanding value as a pioneer, followed by cocksfoot, *Poa pratensis* and bent as consolidation and breakdown of the peat and peaty layers proceeds. Some seeding and manurial trials designed by the Welsh Plant Breeding Station and sown in the Falkland Islands in 1935-36 provided invaluable data in formulating plans for pasture improvement. Seed mixtures are recommended for ploughed up areas about the settlement and for surface sowing on the open camps. Clover establishment is all-important, and in this regard inoculation to ensure the appropriate nodule forming bacteria is advocated.

Systems of grazing management and effects of differential stock intensities on the plant communities are discussed. Open, uncontrolled range grazing led to too close and too continuous a grazing practice on the palatable parts of the range, and to over-lenient a grazing system on the rougher and less palatable portions. Evidence was collected to show that intensity of trampling by grazing animals exerted a tremendous influence on the character of the peaty soils of the Islands, heavy treading, dunging and urination tending to decompose the peat. The penguin grounds were interesting in this regard.

The place of burning in camp improvement is discussed, and emphasis is placed on the advantages of burning the soft camps and the disadvantages of burning the dry camps.

The main grassland types and the relative area of each respective type are portrayed in map and table form. The chemical composition of the main species is also included, these analyses being made at Aberystwyth from materials collected and specially prepared in the course of the survey. The main features of these analyses are the relatively low nutritive value of the grasses indigenous to the Falkland Islands as compared with European grasses and clovers introduced there. These latter differ but slightly in chemical composition when grown in the Falkland Islands as compared with the same species grown in Great Britain, and emphasis is laid on the value of establishing the appropriate European species—grasses, legumes and herbs—in the Falklands to replace, as far as possible, the indigenous species of low nutritive value.

Recommendations are made in the matter of agricultural administration and for a programme of grassland research.

The report is well written, and no pains have been spared to present the botanical, ecological and chemical data in an accurate and readily understandable form.

*—E. BRUCE LEVY, Director, Grasslands Division, Plant Research Bureau, Palmerston North.*

# Notes for the Poultry Farmer

*Contributed by Officers of the Livestock Division*

## The Season for Hatching

IN GENERAL, the correct season for hatching chickens for future profitable egg-production extends from about the end of June until the end of September.

Where special local conditions apply —such as new or fresh ground, possessing natural cover or shade from the hot summer and early autumn sunshine, and where the young stock can roam at will, preferably on the range —October-hatched stock will, with good management, very often grow into well-matured and profitable stock, but generally it is not usual for October-hatched stock to be as well-grown and to give the same margin of profit over cost of keep as September chickens.

For this reason—and also in order to secure stock calculated to mature and grow into specimens fit for the work of perpetuating a strain of fowls possessing size, constitutional vigour, and the ability to give a profitable return in egg production—the work of mating the breeding stock should be completed not later than the end of June.

### *Prospective Breeder*

While the July-hatched chicken will, under good management, often begin production early in the new year, lay a fair cycle of eggs, and possibly have a rest (if not a partial moult) at the usual moulting season for adult stock, nevertheless, such a pullet can be considered a valuable prospective breeder for future maintenance of a strain of fowls. Early-hatched stock can usually be depended upon to grow somewhat larger than the average, and for this reason on every well managed plant the poultry-keeper should seriously consider the question of possessing a batch or two of chickens hatched in July.

Another consideration is the fact that when the chickens are raised from hens (not pullets) the resulting cockerels are usually the choicest and best specimens for breeding.

One factor which influences the quality of July-hatched stock raised from hens after a period of rest from production is the fact that the eggs used for incubation are the first of a cycle of production, and may therefore be considered to possess strength of shell and internal quality, which influence the vitality and constitutional vigour of the resulting chicken.

It is generally admitted that as the laying season advances, so also does the hatching quality of the egg. Where the breeding hen may have become a little fat, the first half-dozen or so eggs laid are possibly not so good for hatching purposes, but where the stock is in good breeding condition (that is, in good condition but not fat) the early eggs of the cycle of production should be considered the most valuable, and full use should be made of them.

Incidentally, a pen of third-season hens used as breeders are extremely valuable for late hatching, as the hens usually begin production later than the first- and second-season hens.

### *Mating of Stock*

The mating of stock for maintaining and perpetuating a strain can well be considered an art, for it is not everyone who has the faculty of observing

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Telephone: Upper Hutt 60.

the various characters which stock may possess and the ability to mate correctly with a view to eliminating the undesirable, as well as maintaining and improving the desirable characters which mean so much in breeding standard bred stock.

Should the poultry-keeper lack the ability or sufficient confidence for this work and feel the need for assistance in the selection of his stock, he should enlist the services of someone of proved ability and try and learn the various essentials and characters to be observed.

In this connection the Department is anxious to assist through the services of the poultry instructional staff.

### *Points To Be Observed*

The standard requirements of a breed should be the first care in mating stock. Size and the points indicative of constitutional vigour should be well understood and given first consideration if one expects to hold a strain.

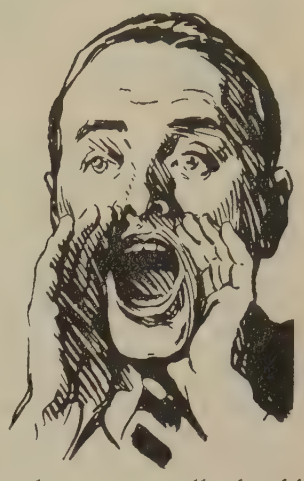
Rather should one err on the question of size, selecting perhaps slightly overweight birds rather than the medium or smaller birds, which generally are preferred for high productive purposes.

High productive qualities cannot always be considered the keystones towards building and maintaining a flock of fowls at a high standard; they must be weighed with all other necessary qualities. These points have been stated in the preceding numbers of the "Journal," and should be reviewed when the final selection is made.

Possibly all the previously selected birds may not now be suitable specimens for breeding purposes because of the strain of the moult impairing their usefulness as breeders. These birds should be rejected. It is not the quantity of breeding stock used, but rather the number of proved birds of known capacity, which will from time to time not only build up but maintain the standard of a strain.

With the advent of mass production of chickens by the modern mammoth incubators, there undoubtedly exists the temptation to use every available bird as breeding specimens. This temptation should be resisted, for it is a truism that one good pullet is at least equal from a profit viewpoint to two medium and three indifferent birds.


# A Clarion Call to ALL Poultry-keepers



## GET EVERY POSSIBLE EGG FROM EVERY HEN

"DOUBLE UP!" is the order of the day for all egg-production. Every extra egg that can be laid is urgently needed to help meet the seasonal shortage and provide an important surplus for export to our kinsfolk in Britain. Every poultryowner, large or small, should make it his bounden duty therefore to further the National Cause immediately and produce EGGS—EGGS—and still MORE EGGS. Get on with the job NOW! Consider this:—If your birds are averaging no better than 3 eggs each per week, **YOU CAN PRODUCE FROM—**

**20 hens .... 1,000 to 2,000 EXTRA eggs a year.**
**50 hens .... 2,500 to 5,000 EXTRA eggs a year.**
**100 hens .... 5,000 to 10,000 EXTRA eggs a year.**
**150 hens .... 7,500 to 15,000 EXTRA eggs a year.**

The extra outputs above are simply a matter of obtaining **one** or **two** extra eggs from each bird weekly. How are you to ensure getting those extra eggs?—**by including British-made Karswood Poultry Spice regularly in the mash!** There is no question about this—Karswood has been **proved** time and time again during the last quarter century to give a yield of 5 eggs per bird weekly and even better results when used consistently.

At the same time Karswood (which contains ground insects) keeps the birds in fine fettle because it is a conditioner as well as an egg-producer. It cannot harm the birds—not a single chick, pullet, hen or cockerel has ever suffered under the Karswood system. On the contrary, millions of birds have become better egg producers and healthier stock. Further, the cost is almost ridiculously low for the results obtained. It costs under 1/8d. a year to give Karswood to one bird every day of the 365 days and in return you stand to get anything from 50 to 100 **EXTRA** Eggs per hen.

ACT NOW MR. POULTRYOWNER—arm yourself with a supply of Karswood and throw your weight into the battle on the Home Front. Remember—an egg is almost a meal in itself and victory goes to the well-fed! **For National Service use—**

# KARSWOOD POULTRY SPICE

Increases egg-production without forcing, because it contains ground insects, but no cayenne pepper, etc.

Breeding from doubtful quality is not wise; nor is it the way to pave the road to success in commercial poultry keeping.

### *Selecting the Male Bird*

The breeding male can be rightly considered responsible for 50 per cent. of the qualities of the resulting stock. Often, the cockerels do not receive proper care and attention. One cannot expect desirable specimens if the birds are housed in overcrowded, cramped quarters. Free range and ample cover are desirable. Otherwise, fighting, with consequent loss of the best birds, often results. It is now too late to repair any damage from these causes, but care should be taken during the current season that these faults are not repeated.

In selecting males, size, vigour, and standard requirements should be well observed. Cockerels should appear bold and masculine, showing aggression, and fight. These are the strong birds constitutionally, and should be preferred. A good, strong cockerel can be mated, in the case of lighter breeds, to from 10 to 15 females, while in the case of the heavier varieties, from 8 to 12 birds will generally prove successful.

Damage is often caused to hens where cockerels possess long sharp spurs. These should always be removed with a tenon saw, care being taken not to cut in too close to the shank. It will be sufficient if the sharp points are removed.

### *Lice and Parasites*

Before mating, and before the cycle of production begins, it is wise to treat all breeding stock for possible infection of parasitic life in order that the stock may be in first-class trim for their work.

For intestinal parasites the preventive advocated in the Department's bulletin No. 66—1 fluid ounce of nicotine sulphate to every 100 adult birds administered in the morning mash, with the addition of 1 oz. of Epsom salts to every 12 birds diluted in the liquid used in mixing the mash—has given general satisfaction. One ounce of the mash is fed in troughs to every single bird, and the stock should be starved for 24 hours before being treated.

Care must be exercised in feeding nicotine sulphate, as it is a poison, and the dose should be carefully adhered to. Nicotine sulphate used on the perches is the best-known preventive for the removal of body lice, and if a thin trickle of the liquid is run along the perches just before the birds go to roost the infestation of body lice will soon disappear. The operation should be repeated from time to time.

### *Cleanliness*

In view of the possibility of the spread of coccidia trouble among the poultry flocks of the Dominion, one cannot emphasise too strongly the necessity for efficient sanitation. Individual poultry keepers can do a great deal towards the control of the trouble. The droppings from the birds should either be burnt, in the case of infected plants, or removed or buried as far away from the land and building occupied by the birds as possible.

Where the trouble has appeared, encouraging results have been secured where the brooders and young stock pens have been thoroughly cleaned out and re-littered twice weekly.

### *Green Feed*

The raising of good chickens largely depends on the liberal feeding of good-quality foods. Too much emphasis cannot be laid on the value of succulent green feed, such as tender young grass, clover, silver beet, green oats, etc., or any tender green material relished by the birds and cut up very finely.

Too often, this is a phase of the management which is neglected on many plants. At times it may be difficult to provide sufficient quantities for all the stock on the plant, but the requirements of the young growing stock must never be neglected.

Poultry-men should realise that green feed not only reduces the cost of feeding (being a food that most plants could, with foresight, provide) but also that it is a very necessary requirement in the raising of all feather stock.

### *Incubators And Brooders*

With the hatching season at hand, brooders and incubators should be thoroughly disinfected and cleaned before use. More often than not the quarters and machines are neglected until they are about to be used, when, under the stress of work, there is sometimes a tendency to neglect the essentials.

## Examination for Chick-sexing

THE Department of Agriculture is prepared to undertake a practical chick-sexing examination of students at Auckland, Wallaceville, and Christchurch during August. There must be at least three candidates offering at each of the above centres before an examination will be held at the respective places. A fee of 10s 6d, payable on application, will be charged each candidate to enter for the examination.

The chickens are to be supplied by the candidates at their own expense under arrangement with the Department. The Department will arrange for the chicks to be hatched under controlled conditions, that is, the incubator to be locked or sealed (or both) just prior to the chicks hatching out.

Those wishing to present themselves for examination should notify the Director of the Livestock Division, Department of Agriculture, Private Bag, Wellington, C1, not later than July 12, when any further particulars required will be supplied.

## Feeding Mangolds To Poultry

L.M. (HAWKE'S BAY):—

I shall be much obliged if you will kindly let me know through your "Journal" whether it is harmful at any time to give the young mangolds which are thinned out to fowls. I have found out that after giving them the fowls do not lay so well, but of course there may be another reason for that.

LIVESTOCK DIVISION:—

Mangolds are quite a good root crop for feeding to poultry, but they should be stored to allow them to sweeten on sugar, as it is more often called, before using.

Fresh crops are suitable as a green food, but the roots of young, or even freshly pulled mangolds, will quickly upset the digestion of poultry, cause scouring, and make the yolk of the eggs almost white in colour, as well as retarding egg production.

# N.Z. Federation of Young Farmers' Clubs

*Edited by S. Freeman, Dominion Organizing Secretary*

## N.Z. Young Farmers' Club in Egypt

MEMBERS will be interested to learn that a Young Farmers' Club has been formed in Egypt. Lieutenant-Colonel C. J. Pierce, 2nd Division Cavalry Regiment, N.Z.E.F., Egypt, has written as follows to the Hon. W. Lee Martin, Minister of Agriculture:—

"The members of Young Farmers' Clubs in my regiment have formed a club here and got in touch with the Department of Agriculture, and last Sunday they conducted us over their State Farm in Cairo. This week they are arranging for us to visit the Royal Agricultural Show. The officials of the State Farm have been most helpful and courteous. As I have several members of the New Zealand Department of Agriculture in my regiment, it is also most valuable to them."

Mr. P. G. Thevenard, of the Kimbolton-Kiwitea Young Farmers' Club, has forwarded extracts of a letter from his brother, Trooper R. H. Thevenard, 2nd Division Cavalry Regiment, N.Z.E.F., which read as follows:—

"We have formed here a Young Farmers' Club, consisting mainly of members of the organisation, and we have got about 80 to join so far. One of our officers is terribly keen on the movement, and the Colonel is also eager to see us do our stuff. One of our chaps who was at Massey College got into touch with the local Director of Industrial Research, and we are going out next Sunday to see the Plant Research Station at Gizeh (near the Pyramids). They are very progressive with their cotton, and do not allow any inferior seed whatever to be sold or planted; all is tested and certified. They have model factories for extracting olive oil, oil of roses, tinning fruits, beans, tomatoes, etc. Any industry they wish to start is first of all tried out in miniature at this station. Other trips have been arranged to cotton mills, industrial factories and works, irrigation schemes, poultry farms, cropping experimental areas, and a horse-breeding establishment. We are also to inspect a date-stoning and sterilising plant."

These letters are of particular interest, and pay a tribute to the keenness of the members of the New Zealand Young Farmers' Clubs who are at present with the forces in Egypt. In spite of the many handicaps of war conditions the movement in the Dominion is still going ahead. Club memberships in all districts are depleted through enlistments, and doubtless before the war is over will be even more so, but the news from their comrades in Egypt will do much to stimulate the efforts of those remaining behind on the "home front."

## Wellington Y.F.C. Sheep Dog Trials

J. W. PALMER, District Secretary, Hastings.

THE District Executive Committee of the Central Hawke's Bay Y.F.C. held a sheep dog trial, open to all financial members of Y.F.C., in the Wellington Provincial Council District, on April 26, at Mr. Ian Henderson's property, Waipukurau.

The sub-committee, consisting of Messrs. N. Tilley, snr., M. Tilley, jnr., and W. J. Craig, jnr., all of Takapau, worked particularly hard, especially the secretary, Mr. M. Tilley. The attendance was somewhat hindered by the petrol restrictions, particularly the attendance from the Wairoa district, and unfortunately the trials were held towards the end of the month, when, no doubt, the petrol supplies were almost used.

It appears that, with the present petrol restrictions, such functions will not receive the fullest support of members of clubs who are any distance away, and that the clubs themselves will have to organise their own field days and may be assisted by a neighbouring club rather than by district or provincial committees.

Mr. J. S. Tait, of Dannevirke, kindly acted as judge. Mr. Tait is well known among the best dog trial men of New Zealand, particularly for his ability in handling dogs. He handled four dogs at once, and demonstrated the ability of each dog while the other three dogs remained under perfect

control. With these dogs he penned three sheep, and instead of closing the gate each dog was in turn brought up and placed across the entrance of the pen. This display received great applause.

At the conclusion of the day Mr. Tait commented on the various runs, particularly on those who secured a place, and stated that the runs of the placed competitors in the open, and even in the maiden events, were of a surprisingly high standard and would gain a place in many of the open trials. He also pointed out the faults of some of the younger competitors who were making their first run at such competitions.

A hearty vote of thanks was passed to Mr. Tait by the district secretary.

The placings were as follows:—

Open Shorthead and Yard (max. 60 points).—H. Campbell's "June" (Hastings Y.F.C.), 57½ pts., 1; W. Toogood's "Nell" (Woodville Y.F.C.), 55 pts., 2; M. Tilley's "Zo" (Takapau Y.F.C.), 50½ pts., 3.

Maiden Shorthead and Yard.—W. Toogood's "Nell" (Woodville Y.F.C.), 55 pts., 1; W. Craig's "Trim" (Takapau Y.F.C.), 50 pts., 2; B. Forbes' "Roy" (Pahiatua Y.F.C.), 42½ pts., 3.

Consolation Event (max. 40 points).—N. Checkley's "Boy" (Pahiatua Y.F.C.), 32 pts., 1; W. McSporan's "Spark" (Takapau Y.F.C.), 31½ pts., 2; Miss M. Matthews' "Lass," Pukeora, Hatuma, 28½ pts., 3.

Special Prize for Competitor having first run in trial and gaining most points.—B. Forbes' "Roy" (Pahiatua Y.F.C.). This trophy was donated by Mr. N. Tilley, of Takapau. The subcommittee agreed to permit Miss Matthews to compete at this trial. She had a very good run in the open, and although she did not gain a place in the other events she was able to gain third place in the consolation event, which was a very creditable performance for this young competitor.

The weather was perfect, and a very successful day was concluded by a social in the evening organised by members of the Waipukurau Y.F.C.

# Y.F.C. National Debating Championship

THE final debate in the National Debating Championship took place at Christchurch on May 15 between the Apiti (Manawatu) team and the Otama (Eastern Southland) team. The result of the contest was a win for the Apiti team by 223 points to 214.

The subject debated was: "That the Increasing of Primary Production for the War Can Best be Achieved by Concentrating All Efforts on Existing Farms Without Developing Other Areas." The Dominion president, Pilot-Officer E. W. Barnett, presided, and Dr. Field, Canterbury University College, acted as adjudicator.

The teams were as follows:—Apiti: H. G. Viles, A. Viles, A. Cowan. Otama: S. Mackay, L. Mackay, E. Cameron. The Apiti team took the affirmative.

In summing up, the judge indicated that he considered the best speaker to be H. G. Viles, with E. Cameron second. The speeches by all members, he said, showed evidence of careful preparation, but in his opinion there was, perhaps, rather too much prepared matter throughout at the expense of proper debating. He congratulated both teams on their very fine performances.

Congratulatory speeches were made by the president and Mr. H. G. Stephens, chairman of the Canterbury Council. The organising secretary, Mr. S. Freeman, also congratulated both teams, and commented on the value to the Y.F.C. movement of such activities as debating.

There was an attendance of about fifty, and the evening was brought to a pleasant close by the provision of supper by the Canterbury Council.

# Central Hawke's Bay District Field Day

THE annual field day held by the Farmers' Union in the Central Hawke's Bay district was entered into by the Young Farmers' Clubs of the district this year, the Waipukurau, Takapau and Onga Onga clubs all taking part, at Arlington Station. Although the weather was overcast, with intermittent showers early in the day, and in spite of the restrictions on petrol, there was a large attendance of about 30 to 40 Young Farmers and some 250 to 300 farmers and their wives.

Mr. A. P. O'Shea, Dominion Secretary of the N.Z. Farmers' Union, who was the main speaker of the day, spoke on "the difficulties ahead for the farming community of New Zealand." Other speakers were Mr. J. W. Palmer, Instructor in Agriculture, Hastings ("Mole Draining—It Pays"); Mr. E. Lister ("Petroleum—Its Relation to Agriculture and Pastoral Industries"); Mr. A. D. M. G. Laing ("Internal Parasites of Sheep"); Mr. E. Bruce Levy ("Our Pastures in Relation to Our War Effort").

Mr. R. McDonald, of Dannevirke, interested a large gallery in the morning with the demonstration with a dog, pointing out the correct method of training them for farm work.

During the day sheep judging open to Y.F.C. members was held, the judges being Mr. C. R. Edgecombe (Romneys), Mr. R. Oakley (Southdowns).

Results were:—

Romneys (points possible, 180).—B. Tod, Otane, 160 pts., 1; C. Hobson, 155 pts., 2

Southdowns.—B. Edgecombe, 1; Miss B. Oakley, 2.

A weight-guessing competition was also held, the winners being:—No. 1 sheep: Mr. J. W. Palmer, 170 lb. (correct weight); No. 2 sheep: Mr. J. Chalmers and J. Oakley, 162 lb. (correct weight).

At the conclusion, Mr. Edgecombe thanked the Women's Division for providing afternoon tea and all the speakers for their informative addresses.

# Meeanee Club's Annual Sports

LESTER L. GRIFFITHS, Chairman, Meeanee Club.

THE second annual sports meeting of the Meeanee Club was, like the first, an outstanding success, and credit is due to club members who assisted in the preparation of the grounds and acted as efficient stewards at the meeting itself. The sports meeting was inaugurated last year by Mr. J. Guthrie, the club's advisory president, with the idea of increasing the club's membership and providing one day a year when all members and friends could meet. The idea, combined with the members' enthusiasm and local support, has done much for the Y.F.C. movement in the district.

The gate showed an increase of £10 over last year, and in all sections entries were considerably higher, particularly in the axemen's and horse events. A very high standard was set in all the jumping events, quite equal to any New Zealand Royal Show.

Mr. C. Oliver was an efficient secretary.

**Lance-Bombardier R. G. Montgomery, of the Meeanee Y.F.C. (delegate to Northern Hawke's Bay District Committee, Wellington Council and N.Z. Federation of Y.F.C., 1938-40) holding his horse "Coquette," winner of the Y.F.C. hack race, and the ladies' hack race, and second in the open hack race. —an outstanding performance for a farm hack.**

The results were as follows:—

**ATHLETIC EVENTS.**

100yds Handicap.—J. Ness, 1; R. Golop, 2; C. Kronk, 3. Time, 10 4-5 sec.

220yds Handicap.—F. Collinge, 1; B. Scullin, 2; O. Banks, 3.

440yds Handicap.—C. Kronk, 1; R. Gollop, 2.

100yds Ladies.—Misses J. Elliott and L. Climo, dead heat, 1.

75yds Ladies.—L. Climo, 1; J. Elliott, 2.

Three-legged Race.—J. Elliott and F. Collinge, 1; L. Climo and B. Scullin, 2.

Married Ladies.—Mrs. Kane, 1; Mrs. W. Brown, 2; Mrs. McCorkindale, 3.

100yds Young Farmers' Race.—H. B. Cornes, 1; G. V. Duigan, 2.

Weight of Sheep.—T. Elmers, correct weight 233lb, 1; M. E. Elmers, 230lb, 2.

**The Meeanee Club's entry in the Napier Centennial Celebrations.**

**CYCLING.**

Boys' Half-mile.—D. Simpkins, 1; J. Dine, 2; A. North, 3.

Young Farmers' Half-mile.—G. Andrews, 1; J. McDonald, 2.

One Mile Handicap.—M. Tarr, 1; T. Attwood, 2; E. Montaperto, 3. Time, 2min 58 3-5sec.

Half-mile.—M. Tarr, 1; T. Attwood, 2.

Two Miles Handicap.—M. Tarr, 1; W. Williams, 2.

**HORSE EVENTS.**

Pony Jump.—W. Lewis, 1; June Wills, 2; H. Thompson, 3.

Draught Horse Race.—Spot Logan, 1; McDonald, 2; E. H. English, 3.

Maiden Jump.—B. Gove, 1; E. H. English, 2; G. Algie, 3.

Turning.—W. Lewis, 1; H. Thompson, 2; S. Cawston, 3.

Bending.—W. Lewis, 1; H. Thompson, 2; S. Cawston, 3.

Pony Race.—H. Marquand, 1; W. Lewis, 2; S. Cawston, 3.

Open Jump.—A. Carswell, 1; Miss J. Patterson, 2; Miss D. Nelson, 3.

Young Farmers' Hack Race.—R. G. Montgomery, 1; J. Parsons, 2; P. Ensor, 3. Time, 51sec.

Handy Hunters.—Miss J. Patterson, 1; J. N. Lowry, 2; E. H. English, 3.

Hack Race.—J. Parsons, 1; R. G. Montgomery, 2; S. Cawston, 3.

Consolation Jump.—J. Vernon, 1; Miss Holden, 2; Miss D. Nelson, 3.

Ladies' Race.—Miss J. Patterson, 1; Miss D. Nelson, 2; Miss M. Wellwood, 3.

Tilting.—Miss M. Wellwood, 1; G. Algie, 2; S. Cawston, 3.

Children's Riding.—Boys: J. Tait, 1; W. Lewis, 2; G. Wood, 3. Girls: Miss June Wills, 1; Miss Pam Wills, 2; Miss C. Thompson, 3.

**AXEMEN'S EVENTS.**

Twelve-inch Standing Chop.—F. Robson, 1; N. Hancock, 2; A. Curtin, 3.

Twelve-inch Underhand Chop.—F. Robson, 1; M. Robson, 2; R. Le Compte, 3.

Fourteen-inch Standing Chop.—N. Hancock, 1; H. Burkin, 2; A. Curtin, 3.

Twelve-inch Jigger Chop.—M. Robson, 1; R. Wood, 2; V. Ward, 3.

Ten-inch Standing.—W. Wittie, 1; R. Ohoiwa, 2.

Fourteen-inch Underhand Chop.—P. Burkin, 1; H. Burkin, 2; M. Robson, 3.

Ladies' Chop.—Mrs. F. Robson, 1; Mrs. Brown, 2; Mrs. Hogan, 3.

Tug of War.—Taradale won Gilbert Challenge Cup outright.

Junior Tug of War.—Napier Boys' High School.

**CLAY BIRD SHOOT.**

Bird, Young Farmers' Eye-opener (Nine Birds).—W. King 1; S. Parsons, 2.

Open Handicap (Six Birds).—A. Clinch, R. Gunn, and C. Gunn (all equal), 1.

Handicap Sweepstake (Nine Birds).—W. Nichol and R. Gunn (dead heat), 1

Quail Drive Sweepstake.—C. Gunn and C. Small (dead heat), 1.

Consolation Shoot (Six Birds).—R. Hartree, A. White, and C. Small (all equal), 1.

Consolation Shoot (Six Birds).—R. Gunn, A. White, C. Small, R. Douglas, J. Davy, and C. Holt (all equal).

# Ellesmere Y.F.C. Visit to Irrigation Works in Canterbury

D. HURFORD, Hon. Secretary, Ellesmere Club.

VISITS to irrigation construction works were made by the Ellesmere Club during a recent field day. Arriving at Mr. W. R. Hammond's farm, Winchmore, the party was met by Mr. J. O. Riddell, engineer-in-charge of the Lyndhurst-Methven scheme, and Mr. W. Stafford, Department of Agriculture, Timaru. Mr. Riddell explained the method by which a farmer received his supply of water, and Mr. Stafford then showed members over the experimental area of 36 acres on Mr. Hammond's property.

Here members were shown what irrigation can do on light, stony land. The pasture had been down two years, and compared very favourably with anything on heavy land in the Ellesmere district. The border-dyke system is used, and on three borders which had not received any water at all the grass grub had made a clean sweep, while on the rest of the paddock not a trace of the grub was to be seen—an excellent illustration of the value of irrigation in controlling grass grub on light land.

The party then travelled along the Lyndhurst-Methven race to where it will join the main diversion race. Every two or three chains concrete gates have been built in the race to check the rate of flow, as the fall of the land is about 50 feet per mile. Stops were made several times to inspect the works.

After lunch, which was taken near Methven, the party proceeded towards Springburn, passing Alford Forest and Bushside on the way. At Springburn a P.W.D. camp under construction was visited, and nearby members saw machinery at work cutting through a hill.

The next call was made at Mount Somers, where the main race has been practically completed. Dragline shovels were used, and a huge bank of shingle was thrown up on both sides of the race.

Near Surrey Hills a syphon to carry the race under the Hinds River was seen under construction. A pump with a capacity of 87,000 gallons an hour is used to keep the water clear of the foundations. Going on past Montalto P.W.D. camp the party finished the day's tour at the headworks on the Rangitata River at Klondyke, where Mr. Smith explained all details of the work being carried out there.

Before leaving for home Messrs. K. McGill and M. Scott expressed the thanks of the club members to Messrs. Stafford, Riddell, and Smith for their courtesy in showing members over the scheme. On the return journey, Leeston was reached at 7.30 p.m., the members having covered about 180 miles.

# Clevedon Club's Field Day

A. V. DRIVER, Hon. Secretary, Clevedon Club.

THE first field day conducted by the Clevedon Y.F.C. was held on the Clevedon Showgrounds on April 13, and was an unqualified success. The club enlisted the interest and support of the district farming community generally, and although heavy rain lasted all the previous night and right up to the time the display was due to start, there was an attendance of 60, including members of the A. and P. Association, Farmers' Union, visiting clubs and local Y.F.C. members.

In arranging the programme the field day committee appointed a club member as junior demonstrator in each instance, the subject being finalised by a senior who in every case was a well-known judge.

Beginning at 11.45 a.m., a demonstration on Southdown and Romney sheep was given by Mr. Vic. Driver (club member) and then by Mr. A. D. Bell, of "Hakerewai" fame. Two very fine specimens from Mr. Bell's stud were used to give visitors a sound impression of the valuable characteristics of these two breeds.

Next came draught horses, with Mr. Gordon Bell (club member) as junior demonstrator and Mr. E. M. Wilson as senior. Both are keen advocates of the Clydesdale, and were able to show

the all-round usefulness of this famous breed.

Lunch was served under the grandstand at 1 o'clock, the arrangements being well carried out by an able committee under the supervision of Mr. W. St. Paul.

The club chairman, Mr. F. S. Atchison, outlined the aims and objects of the Young Farmer movement, and stressed the importance of field days. He thanked those who had come a distance, particularly the lecturers and all who had so willingly assisted, including the A. and P. Association for kindly lending the grounds and Messrs. Bell, Fleming and Duder for supplying the stock. Mr. J. P. Kalaugher suitably replied on behalf of the visitors.

Messrs. Rex Lane (member) and J. P. Kalaugher, secretary of the Friesian Association, gave a demonstration on dairy cows. A judging competition was held on three Jersey cows, with Mr. Kalaugher as judge. The total points awarded to the cows by the judge was 219 out of possible 300. Prize winners were:—G. Bell (220), 1; I. Strachan (217), 2; R. Orum and F. Atchison (215), equal, 3.

Mr. Collins, M.R.C.V.S., District Superintendent, Department of Agriculture, gave a lecture on "Diseases of Horses," dealing particularly with the hereditary troubles on which a horse may be rejected under the recently introduced Stallions Act. Mr. H. W. Carbury, M.R.C.V.S., Department of Agriculture, lectured on "Teeth Troubles in Horses," showing many ailments that may be traced to this source.

# Stock Judging Competitions at Whangarei Summer Show

I. D. BODLE, Matarau Club.

THE stock judging competitions conducted by the Whangarei District Committee at the Whangarei Agricultural and Pastoral Show were held on March 8 under ideal weather conditions. In fact, many members who wished to compete were too busy finishing their crops of autumn hay.

Entries for the competitions were received from as far south as Pukekohe and as far north as Kaitaia. Results were as follows:—

Bacon Pigs (senior).—H. G. Agnew, Matarau Club, 1; T. McKegg, Matarau Club, 2; W. L. Morrison, Maungatapere Club, 3.

Bacon Pigs (junior).—S. Stringer, Whangarei High School, 1; N. Griffin, Whangarei High School, 2; I. Crawford, Whangarei High School, 3.

Jersey Cows (senior).—V. Flynn, Kaitaia Club, 1; J. C. Armstrong, Pukekohe Club, 2; W. L. Morrison, Maungatapere Club, 3.

Jersey Cows (junior).—N. Griffin, Whangarei High School, 1; I. Leslie, Whangarei High School, 2; P. Eyton, Whangarei High School, 3.

Bacon Pigs (teams).—Matarau Club (H. Agnew, A. Rushbrook, T. McKegg), 1.

Jersey Cows (teams).—Maungatapere Club (W. Morrison, J. Stevens, A. Horn), 1.

Special prize for most points in competitions.—H. G. Agnew, 216 pts., 1; T. McKegg, 204 pts., 2; W. L. Morrison, 188 pts., 3.

It is but fair to admit that the Whangarei High School pupils returned better cards than members of the Young Farmers' Clubs.

The District Committee wish to thank Dr. Walker and Mr. P. C. Butler for prizes, Messrs. Dewhurst and Morpeth for acting as judges, the Jersey Club and the A. and P. Society for their help, and the Whangarei Canvas Coy. who lent their tent for our use.

Another factor which did much to make the competitions a success was the active co-operation of club members, High School pupils and Mr. E. B. Glanville, Department of Agriculture.

## Most Benefit From Agricultural Education

The following is an extract from an English farming journal, and is of particular interest to Y.F.C. members in New Zealand, as doubtless it has a similar application:—

"Mr. N. Gettins, of the Ministry of Agriculture, in addressing a Young Farmers' school at Glenarm last week, discussed the age at which members derived most benefit from agricultural education, and stated that in his opinion it was between the ages of 17 and 25 years, when the mind was more easily impressed and a higher responsibility realised."

# Among the Clubs: Reports on Activities

### Wairarapa.

**Carterton.**—Arrangements for ball. Two debates between club members:—(1) "Grassland Farming v. Supplementary Cropping" (speakers, B. Brasell, J. Milne, T. Orr for "Grassland," and W. Campion, H. McKenzie, A. Ordish for "Cropping"); (2) "Tractors v. Horses" (speakers, Mr. Knutson, F. Ward, R. McKenzie for "Tractors," and L. Renall, J. Ross, A. Fisher for "Horses").

**Featherston.**—Programme of activities drawn up for ensuing year; arrangements for a debate with Carterton Club.

**Greytown.**—Selection of team for stock-judging competition at Masterton. Club debate "That the Tractor is more Economical than the Horse on the Farm." Messrs. Skeet and Ben acted as judges and gave the decision to the affirmative supporters.

## Manawatu.

**Bunnythorpe.**—The club advisory president, Mr. J. Linklater, exhibited films taken during his recent South Sea Island trip, and also scenes of interest taken on his farm.

**Colyton.**—Discussion and impromptu talks by club members on "Future Activities of the Club."

**Feilding.**- Election of two delegates to the Feilding Farmers' Union. Adoption of a syllabus of lectures drawn up by the committee for the ensuing year. Lecture on "Denmark" by Mr. H. C. D. Somerset.

**Fitzherbert.**—Discussion re Y.F.C. Course to be held at Massey College; also re the urgency of dealing with parasitic diseases in hoggets and calves. Lantern lecture by Mr. A. W. Hudson, Massey College, on "The Use of Fertilisers." The following officers were elected at the annual meeting: Advisory president, Mr. A. Hopcroft; chairman, J. D. Woodley; secretary, T. P. Goulter.

**Halcombe.**—Annual meeting. Officers elected: Advisory president, Mr. G. Buchanan; chairman, N. Pleasants.

**Kimbolton-Kiwitea.**—Arrangements for dance; discussion re Y.F.C. sports and competitions Lantern lecture (the first of a series) by Mr. Hill Motion, on "The Feeding of Stock." At the annual meeting officers were elected as follows: Advisory president, Mr. H. Lawson chairman, C. Tappin; secretary and treasurer. W. Lodge.

**Levin.**—Arrangements for field day. Address by Mr. G. Buchanan on "Grasses and Clovers and their respective merits in Pastures."

**Opiki.**—Business meeting. Discussion re short course at Massey College. The advisory president outlined the procedure at the annual district meeting.

**Oroua Downs.**—Committee formed for selection of trees in connection with the Centennial tree-planting scheme. Arrangements for field day. Films exhibited by Mr. H. de O. Chamberlain, including "T.B." and "Heredity."

**Otaki-Te Horo.**—Lantern lecture by Mr. L. Gorman on "Plant Research." At the previous meeting a lecture on "Book-keeping" by Mr. Wills, Otaki.

**Rangiotu.**—Report by delegates to annual district meeting. Discussion on euchre tournament. Lecture by Mr. A. Bayley, Government Veterinarian, on "Diseases of Dairy-stock."

**Rongotea.**—Report on flag 500 and dance; donation made to Patriotic Fund. Invitation accepted from Oroua Downs Club to attend field day at Massey College. Address and exhibition of films by Mr. H. de O. Chamberlain, Department of Agriculture. During April a party of 30 club members travelled to Wellington by bus and cars and visited the Centennial Exhibition.

**Shannon.**—Discussion on programme of lectures, etc., for the year; also Y.F.C. Centennial tree-planting scheme.

**Tokomaru.**—Business meeting. Arrangements for dance, etc.

**Waituna.**—Discussion re Short Course to be held at Massey College. Arrangements for dance, half proceeds to go to the National Patriotic Fund. Short talks by members on "The Breeding and Management of Stud Stock."

## Wanganui.

**Bulls.**—Arrangements for annual ball; selection of debating teams. Report by C. B. Anderson, on the Wellington Provincial Stock-judging competitions, and the annual district meeting.

**Taihape.**—Field day at the Karioi State Forest. Members were conducted round the nurseries, and then went for a long drive through the forest, the different varieties of trees and other points of interest being pointed out; the visiting party numbered 17.

## South Taranaki.

**Alton.**—Annual meeting. Officers elected: Advisory chairman, Mr. A. Taylor; chairman, C. Penny; secretary, T. W. Boyce; treasurer, P. Metcalfe. Cup to be purchased for pasture-judging competition. Decided to retain as active members all members enlisting for overseas service. Arrangements for co-operation with clubs adjacent to Hawera for social and other activitives, inter-club visits, etc.

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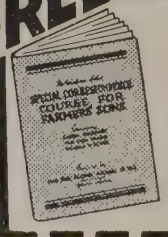

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**Hawera.**—Alton Club to be invited to a social evening. Lecture by Mr. E. K. Cameron, on "Bird Life, Habits and Migration." At a previous meeting a talk was given by Mr. L. A. Taylor on "The Weather."

**Kaponga.**—Address by Mr. Jackson on "The Wintering of Pigs."

## Central Taranaki.

**Cardiff.**—Annual meeting. Election of officers, etc.

**Midhirst.**—Arrangements for dance. Five-minute talks to be given by members at next meeting. Address by Mr. Vinton, Bacteriologist, on "How to Produce Finest Grade Milk."

## North Taranaki.

**Karawaka.**—Annual meeting. Officers elected: Advisory president, Mr. C. B. Lepper; chairman, I. B. Julian; secretary, L. V. Oliver; treasurer, N. Tate.

**Mangorei.**—Demonstrations on stock, by Mr. R. B. Wood, veterinarian.

**Okau-Tongaporutu.**—Report by K. Calvert on the annual district meeting. Arrangements for field day. A report on the annual club dance showed it to be a financial success.

**Rahotu.**—Donation of £1 to Patriotic Fund. Report of dance. Brief resume of their impressions, etc., by members who had visited the Centennial Exhibition.

**Urenui.**—Annual meeting. Officers elected: Advisory president, Mr. W. J. Freeth; chairman, G. Sulzberger; secretary, J. F. Luxton; treasurer, H. Wetton.

## Southern Hawke's Bay.

**Ballance.**—Report of annual meeting, showing credit of £5 6s 10d, which was donated to the Red Cross Fund. Club debate, "That the best net returns are obtained by eliminating the Plough" won by the affirmative.

**Mangatainoka.**—Arrangements for annual dance. Working bee arranged for tree-planting. Address by Mr. T. Richardson on "Grasses and the Types suitable for Different Districts."

**Dannevirke.**—Annual meeting. Officers elected: Advisory president, Mr. L. Feirabend; chairman, W. Simmons; vice-chairman, H. M. Poole; secretary, K. Bateman; treasurer, J. Poole. Programme of future activities discussed. Decided to donate £2 2s to Patriotic Fund.

## Central Hawke's Bay.

**Onga Onga.**—Annual meeting. Officers elected: Advisory president, Mr. E. S. Bibby; chairman, I. Schaw; secretary, S. T. Carter; treasurer, C. Masters.

**Tikokino.**—Lecture by Dr. Allen on "Personal Hygiene and General Health of the Body."

## Northern Hawke's Bay.

**Matapiro.**—Arrangements for field day. Talk by L. C. Gallien and J. Wedd on "The Working of Sheep Dogs at Trials." This was demonstrated with drawings on the blackboard, L. Gallien dealing with the huntaway and J. Wedd with the heading dog. Advice was given to amateurs, and the rules of the N.Z. Dog Trial Association were explained. All present were invited to attend the Tunanui dog trials.

**Meeanee.**—Annual meeting. Officers elected: Advisory president, Mr. S. Parsons; chairman, L. L. Griffiths: secretary, I. D. Crawshaw; treasurer, E. L. Fairey. Radio lecturettes discussed; report on sports meeting. Programme for ensuing year.

**Nuhaka.**—Annual meeting. Officers elected: Advisory president, Mr. A. D. Hughes; vice-president, Mr. H. Schwass; chairman, J. Mataira; secretary, G. J. Whitmore.

**Wairoa.**—Annual meeting. Officers elected: Patron, Mr. A. T. Carroll; advisory president, Mr. A. C. de Lautour; chairman, W. Powdrell; secretary, W. G. Brownlie; treasurer, J. Mulcaster. Discussion re programme for ensuing year, etc.

## Poverty Bay.

**Gisborne.**—Annual meeting. Officers elected: Advisory president, Mr. R. Graham; chairman, J. L. Munro; secretary, N. T. Tolerton; treasurer, W. Drummond.

## Eastern Southland.

**Dipton.**—Discussion re programme for year's work; also Centennial tree-planting scheme. Short speeches by members on "What I would do if I were Boss on the Farm."

**Drummond.**—Annual meeting. Officers elected: Advisory president, Mr. R. Kennedy; chairman, H. Hubber; secretary and treasurer, I. Kincaid. Discussion re Centennial tree-planting scheme; arrangements for sound-cinema evening.

**Lochiel.**—Lantern lecture by Mr. W. R. Harris, Invercargill, on "Winter Feeding."

**Thornbury.**—Annual meeting. Officers elected: Advisory president, Mr. J. Linscott; chairman, K. S. McKenzie; secretary, M. L. Leith. Lecture by Mr. C. B. Matheson, National Bank, Riverton, on "Banking Services."

**Woodlands.**—Annual meeting. Officers elected: Advisory president, Mr. G. Stevenson; chairman, K. Hargest; secretary, B. P. Butson.

**Wyndham.**—Discussion re Centennial tree-planting scheme. Lecture by Mr. W. R. Harris, Invercargill, on "Pasture Management and Topdressing."

## Western Southland.

**Balfour.**—Annual meeting. Report of District Executive Committee meeting.

**Crookston.**—Arrangements for euchre tournament and dance. Report on District Committee meeting. Addresses by two club members, A. Revie and G. Adam, on "The Centennial Exhibition."

**Moa Flat.**—Annual meeting. Officers elected: Advisory president, Mr. G. M. Love; chairman, J. B. Gordon; secretary, H. A. Duff.

**Otama.**—Annual meeting. Officers elected: Advisory president, Mr. D. Bruce; chairman, P. Mackay; secretary, W. G. White: treasurer, C. G. White. Programme for year's work; lecturers, discussion, impromptu speeches, debates, etc., arranged.

## South Otago.

**Clinton.**—Lecture by Mr. W. Peirson, Gore, on "Caring for Hoggets."

**Lawrence.**—Debate with Milton Club, the subject being "That Dairyfarming is more profitable and pleasant than Sheepfarming." Officers elected at the annual meeting: Advisory president, Mr. R. McCaw; chairman, J. Walker; secretary, W. A. Cameron; treasurer, R. Cameron.

**Warepa.**—Lecture by Mr. J. Dodds on "Wool and Methods of Classing." Officers elected at the annual meeting: Advisory president, Mr. A. J. Christie; chairman, T. Maitland; secretary and treasurer, W. F. Ashman.

## Central Otago.

**Alexandra.**—Annual field day at Earnscleugh. Demonstrations included the following: High-pressure spraying outfit (Mr. W. H. Hinton, Hinton's Orchards, Ltd.); grafting and budding (Mr. Lloyd Williams, Department of Agriculture); handling and throwing a flighty horse (Mr. G. G. Calder, Department of Agriculture). At the annual meeting officers were elected as follows: Advisory president, Mr. J. Muir; chairman, R. White; secretary, P. Weaver; treasurer, O. McCarthy.

**Arrowtown.**—Discussion re Centennial tree-planting scheme. Impromptu speeches by members.

**Roxburgh.**—Lecture by Mr. S. Frew, Department of Agriculture, on "The Marketing of Pip Fruit from Pre-war times to the Present Day."

**Upper Manuherikia.**—Annual meeting. Officers elected: Advisory president, Mr. W. Armstrong; chairman, D. Hamilton: secretary, H. Mee. Two challenge cups were presented by Mr. J. Wilson for annual dog trial competition between members, one for heading events and the other for huntaway. These were competed for at the St. Bathan's Collie Club trials, which included two classes for Y.F.C. members, the results being as follows: Heading, W. McConnachie 1, W. Harley 2; Huntaway, W. Harley 1, W. McConnachie 2, T. Hamilton 3.

## Dunedin.

**Palmerston.**—A discussion on club dance. Lecture by Dr. T. T. Thomas, on "The Formation of Soil." Officers elected at the annual meeting: Advisory president, Mr. Ivan Smith; chairman, I. T. Smith; secretary, J. A. Chisholm.

**South Taieri.**—Preliminary arrangements for this year's ploughing match. Films were exhibited of agricultural interest, including "Land Clearing," "Clover," and "Seed Dispersal." Members of the Farmers' Union and the W.D.F.U. were present.

**West Taieri.**—Annual meeting. Officers elected: Advisory president, Mr. D. Grant; chairman, K. W. Reid; secretary and treasurer, W. A. Young.

## North Otago.

**Papakaio.**—Annual meeting. Officers elected: Advisory president, Mr. D. Borrie; chairman, J. R. Borrie; secretary, G. C. Hurst. Mr. T. A. Sellwood, Department of Agriculture, exhibited films including "Tree-stumping," "Weeds," and "Our Daily Bread."

## South Canterbury.

**Albury.**—Business meeting.

**Cannington-Cave.**—Presentation of cup for the most improved debater in the club for the year 1939 to R. McKenzie; cup donated by Mr. G. Squires. Address by Mr. G. Squires entitled "Shelter and Shade on Farm."

**Geraldine.**—Mr. K. McKenzie, chairman of the Geraldine County Council, presented the stock valuing cup to V. Stonyer; placings were: V. Stonyer 1, J. Thatcher 2, D. Robinson 3. Address and practical demonstration by Mr. M. Watson on "The Uses of Concrete on the Farm."

**Hunter.**—Annual meeting. Officers elected: Advisory president, Mr. A. Robinson; chairman, I. McNeill; secretary, F. Scott; treasurer, J. O'Connell.

**Maungati.**—Annual meeting. Arrangements re programme, etc.

**Milford.**—Discussions on scheme for teaching young tractor drivers, and ideas for the settlement of young farmers on the land. Club debate, "That Freehold Tenure of Land is preferable to Leasehold Tenure." R. Palmer, L. Livesay, and G. Crossman took the affirmative, and W. McCormick, J. Dale, and G. Lyall the negative. The judge, Mr. G. Mulligan, gave the award to the team supporting the negative.

**Pleasant Point.**—Annual meeting. Officers elected: Advisory president, Mr. D. M. France; chairman, S. F. Jackson: secretary, R. S. France; treasurer, A. Crombie. At the following meeting the year's programme was arranged, and a discussion took place on the Y.F.C. Land Settlement Scheme.

**Waihaorunga.**—Address by Mr. A. M. Paterson, entitled "Obstacles in the Way of the New Zealand Farmers."

## Ashburton.

**Hinds.**—Discussion on preparation of ground for tree-planting. Team to be entered for rifle shooting contest at Ashburton. Lecture by Mr. A. Douglas, Inspector of Stock, on "The Feeding of Stock."

**Mayfield.**—Programme of meetings discussed. Arrangements for annual dance. Mr. R. Inch, Department of Agriculture, spoke on items of general interest to Y.F.C. members for the coming year. At the annual meeting the following officers were elected: Advisory presi-

dent, Mr. J. W. Kingan; chairman, W. F. Mulligan; secretary, M. Austin; treasurer, H. Murdoch.

**Methven.**—Arrangements for field day. Lecture by Mr. W. F. Ross on "The Training of Sheep Dogs."

### Christchurch.

**Darfield.**—Programme for future meetings; teams picked for club debate. New members elected.

**Ellesmere.**—Arrangements for annual dance. Address by Mr. J. A. Scott, on "Farm Accountancy."

**Teddington.**—Business and general meeting, following which the club members were the guests of the Motukarara Farmers' Union at a social evening.

### North Canterbury.

**Amberley.**—Lecture by Mr. Strachan on his travels abroad, illustrated by lantern slides.

**Hawarden.**—Lecture by Dr. Weston, Lincoln College, on "Farm Accounts." Members of the Farmers' Union and pupils of the District High School were present by invitation.

**Oxford.**—Annual meeting. Officers elected: Advisory president, Mr. A. Winter; chairman, J. Perham: secretary, I. Croy. Arrangements for table tennis evenings during the winter months.

**Scargill-Omihi.**—Lecture by Mr. Cameron (judge at Omihi Collie Club trials) on "The Training and Working of Sheep Dogs." At the previous meeting Dr. Burns, Lincoln College, gave a lecture on "The Uses of Manures and their Application."

### Nelson.

**Moutere.**—Annual meeting. Election of officers, etc.

### Marlborough.

**Flaxbourne.**—Annual meeting. Election of officers. Programme for year's work, field days, lectures, etc.

### Westland.

**Murchison.**—Talks by members (C. Rait, R. Thomson and R. Newman) on their impressions of a visit to the Centennial Exhibition. At the previous meeting a lecture was given by Mr. A. D. Mercer, Department of Agriculture, on "Land Clearing."

**Matawai.**—Impromptu speeches by members. Officers elected at the annual meeting: Advisory president, Mr. H. J. F. Tombleson; chairman, P. P. Thomson; secretary, F. B. McLoughlin; treasurer, W. E. Clark.

**Te Karaka.**—Talks given by members in a contest for trophy donated by Mr. W. C. Bull; "Foot-rotting" (T. McLean); "Care of Dogs" (D. Bright); "Shelter Belts" (J. Dymock); "Manuring" (A. Manuel); "Sickness" (A. Young); "Hay-baling" (A. Bayley); "Ploughing" (J. Bayley). At previously unreported meetings lectures were given as follows: "Mineral Diseases in Stock," by Mr. R. E. Alexander, Government Veterinarian and "Soil Erosion" by Mr. K. F. Jones. Officers elected at the annual meeting: Advisory president, Mr. W. C. Bull; chairman, D. Bright; secretary, A. C. Bayley; treasurer, W. Perreal.

**Tolaga Bay.**—Annual meeting. Officers elected: Advisory president, Mr. G. E. Robinson; chairman, G. Robison; secretary, I. James.

### Taumarunui.

**Taumarunui.**—Final arrangements for district court at Waikato Winter Show. Club debate "That High-priced Beef Cattle are more efficient for crushing Broken Country than Cheaper Breeds, as an economic Proposition." Mr. O. J. Howarth, headmaster of the District High School, acted as judge.

### Te Kuiti.

**Otorohanga.**—Arrangements for annual ball. Football match arranged with Kakepuku Club. Talk by Mr. D. Brightwell on "Abbreviations in Book-keeping and Cheques." At the annual meeting the following officers were elected: Advisory president, Mr. H. H. Evans; chairman, S. Tye; secretary, D. W. McCormick; treasurer, G. Symes. A district field day was held on the properties of Messrs. V. M. D. Hitchings and T. Cumpstone. Stock-judging competitions were held for the F.A.C. Challenge Cup and miniature cup donated by Mr. E. T. Brightwell, won by R. Miln (Te Anga), with C. Murphy (Otorohanga) 2nd, and O. Gordon (Te Anga) 3rd.

### Eastern Bay of Plenty.

**Edgecumbe.**—Annual meeting. Officers elected: Advisory president, Mr. W. A. McCracken: chairman, N. J. Jameson; secretary, A. C. McCracken.

**Taneatua.**—Annual meeting. Officers elected: Advisory president, Mr. M. Grace; chairman, W. Shearer; secretary, C. J. Mitchell.

### Western Bay of Plenty.

**Kati Kati.**—Business meeting. Arrangements for trip to Centennial Exhibition.

**Paengaroa.**—Annual meeting. Officers elected: Advisory president, Mr. J. B. Cawte; chairman, A. Walter; secretary, C. W. Riddell; treasurer, A. Riddell.

**Pukehina.**—Arrangements for debate with Te Puke Club. A practice debate was held, the subject being "That the Farmer serves the Community better than Townsmen." The speakers were G. Law, B. Byrnes, S. Gibbons (affirmative), D. Shearer, E. Taylor, T. Cammock (negative).

**Tauriko.**—Address by Mr. A. V. Allo, Department of Agriculture, on "Gorse Seed Weevil." Club debate, "That the Farmer serves the Community better than the Townsman."

**Tauranga.**—Discussion re hockey team. Debating team selected and practice debate arranged. Impromptu speeches by 11 members, Mr. A. V. Allo, Department of Agriculture, acting as judge; won by A. Voss, with R. Hamilton 2nd and M. Wilson 3rd.

**Te Puke.**—Discussion re competitions, ensilage, root-crops and pastures. Committee set up to collect material for a Y.F.C. Court at the Waikato Winter Show. Films exhibited by Mr. C. Walker, Department of Agriculture, including "Salt of the Earth," "Destruction of Rats" and also scenic views. At the previous meeting an essay by W. Pryor entitled "Our Dairy Herds" was read. Lecture given by Mr. A. V. Allo, Department of Agriculture, on "The Sowing-down of Permanent Pasture."

**Waihi.**—Lecture by Mr. A. V. Allo, Department of Agriculture, on "Feed Flavour."

### Rotorua.

**Horo Horo.**—Lantern lecture by Mr. H. Woodyear Smith, on "Farming in Australia and New Zealand."

**Putaruru.**—Discussion re Y.F.C. Court at Waikato Winter Show. Lantern lecture by Mr. Bruce Smith, showing Norway, Denmark, etc., changes in the development of Agriculture.

### Waikato.

**Rauraki.**—Report on district committee meeting. Address by Mr. Niblock, Paeroa, on "Farm Accountancy."

**Kakepuku.**—Arrangements for football match with Otorohanga Club; team selected. Report on district committee meeting; discussion re Y.F.C. Court at Waikato Winter Show. Decided to invite parents and friends to the debate with Otorohanga Club; subject of debate, "That Secondary Industries in New Zealand should be encouraged." At the previous meeting a club debate was held, "That Cropping is superior to Grassland Farming from the point of view of Dairy Production." The affirmative side won by 285 points to 175, Mr. W. G. Neill, sen., being the judge.

**Te Awamutu.**—Field day held at Waikeria Institute and Mr. W. L. Walker's farm. Members were conducted in the morning through the main buildings of Waikeria Institute by Mr. Dunlop; details of records, farm accounts, etc., were explained, and apple-grading, etc., was viewed. The afternoon was spent on Mr. Walker's farm, where his particular methods were explained and studied. There was an attendance of 44, including 12 visitors.

### Auckland.

**Clevedon.**—Field day at Clevedon Showgrounds. Demonstrations were given as follows: Southdowns (Mr. A. D. Bell); Romneys (Mr. A. V. Driver); draught horses (Messrs. E. M. Wilson and G. A. Bell); dairy cows (Messrs. J. P. Kalaugher and J. R. Lane). A stock-judging competition was held, Mr. J. P. Kalaugher acting as adjudicator. Lectures were also given, "Disease in Cows" (Mr. Collins) and "Teeth Troubles in Horses" (Mr. Burberry, Department of Agriculture). There was an attendance of 60.

**Harrisville.**—Annual meeting. Officers elected: Advisory president, Mr. J. Armstrong: chairman, E. K. Alexander; secretary, G. A. Barrett. Sound films were exhibited by Mr. J. E. Bell, Department of Agriculture, as follows: "Dairy Farming in U.S.A.," "Pig Production" and "Reproduction among Mammals."

**Mangatawhiri.**—Annual meeting. Officers elected: Advisory president, Mr. D. McClay; chairman, H. Newland; secretary, P. G. O'Brien; treasurer, R. E. Hale.

**Mauku.**—Report on council meeting. Arrangements for dance. Films exhibited by Mr. R. S. Naylor, "Quality Milk," "Southward Bound" and "Destruction of Hawks and Vermin."

### Warkworth.

**Kaukapakapa.**—Arrangements for club debate, subject to be "Should Women be employed on Farms in War-time." Lantern lecture by Mr. H. Woodyear Smith on "Manures and their Manufacture." At the previous meeting an account of a recent field day at Southdown Freezing Works was given by J. Manuel and A. Swinburne; the field day was held in connection with the baconer-pig competition.

**Wellsford.**—Lecture by Mr. P. S. Syme, Department of Agriculture, on "Sowing-down of Pastures."

### Whangarei.

**Matarau.**—Business meeting. Discussion re proposed northern tour, and farm schools at Ruakura, Pukekohe and Whangarei.

**Maungakaramea.**—Business meeting. Programme of activities.

**Maungatapere.**—Lecture by Mr. H. H. Preston, Supervisor to the Northland Pig Council, on "Pig-breeding." Officers elected at the annual meeting: Advisory president, Mr. W. H. Ellis; chairman, A. Horn; secretary and treasurer, D. D. Robinson.

### Dargaville.

**Ruawai.**—Annual meeting. Officers elected: Advisory president, Mr. K. R. Gunderson; chairman, G. Robson; secretary and treasurer, H. McCarthy.

**Tangiteroria.**—Annual meeting. Officers elected: Advisory president, Mr. R. J. Bale; chairman, G. R. Thornton; secretary, C. Beatly; treasurer, G. Beatly.

### Kaitaia.

**Kaitaia.**—Remits for district committee meeting. Club debate "That Farming in New Zealand offers the most Attractive Career for a Young Man." Speakers: A. Bell, T. Flinn, G. Bell (affirmative), S. Matthews, J. Cowie, P. Heath (negative). Messrs. C. S. Puchey and E. W. Hansen acted as judges, and awarded the decision to the negative.

**Oruru.**—Annual meeting; previous year's officers elected for a further term.

# Health Notes for the Farm

*Contributed by the Department of Health*

## Prevention and Treatment Of Heart Disease

BEFORE William Harvey in 1628 described the circulation of the blood and showed how the heart pumps blood through the body and how the blood comes back again to the heart to be pumped through the lungs, the heart itself was little understood. It was regarded by many as a sort of furnace for heating the blood, and it was thought that when the blood became cold it filled the heart, which heated it up again, just as a fire heats up a kettle of water.

Some people thought that the body was full of blood, just as a sausage is full of meat, or a balloon full of air or gas, but even the cleverest scientists were firmly convinced that the blood ebbed and flowed up and down the same veins or channels. The arteries, they thought, contained air or spirits, and it was commonly suggested that a certain vapour and blood made their way up and down the blood vessels in the same way as a lift makes its way up and down a lift well. These obscure theories persisted until they were refuted by William Harvey in his book, "The Motion of the Heart and Blood."

### *Dedication*

The following words, a stimulus to those who plant new knowledge despite ridicule and disparagement, appear in his dedication of this work to the President of the Royal College of Physicians:—

"The studious and good and true never suffer their minds to be warped by the passions of hatred and envy. Neither do they think it unworthy of them to change their opinion if truth and undoubted demonstration require them so to do. Nor do they esteem it discreditable to desert error, though sanctioned by the highest antiquity, for they know full well that to err, to be deceived, is human; that many things are discovered by accident, and that many may be learned indifferently from any quarter, by an old man from a youth, by a person of understanding from one of inferior capacity. 'I avow myself the partisan of the truth above; and I can indeed say that I have used all my endeavours, bestowed all my pains, in an attempt to produce something that should be agreeable to the good, profitable to the learned, and useful to letters."

At the tercentenary commemoration of his death it was said: "To medical practice, Harvey's discovery stands much in the same relation as the discovery of the mariners' compass to navigation."

### *Heart Is A Central Pump*

The human heart, whose function Harvey shed such light upon, is a central pump of the body controlling the flow of its life stream. Beating at the normal rate of more than 70 times a minute, the heart will pump five quarts of blood. Often it is beating faster and pumping twenty quarts a minute. This hard-working, wonderful piece of mechanism needs to be treated fairly. It does not always receive fair treatment, and is liable to get out of order and even cease to perform its vital function.

In New Zealand in 1938 there were 4171 deaths from diseases of the heart and arteries, that is 35 per cent. of the total deaths. Some may regard deaths from these diseases as the inevitable results of fair wear and tear, but analysis shows that many of these occur before the age of sixty had been reached, and even many before the age of forty.

Many of these deaths might have been prevented. It cannot be said that heart deaths occur only in those persons whose period of active working-life is over.

In the first place, many of the signs which a person may think mean heart disease can be caused by some other disease. Indigestion, lung trouble, and nervousness may cause pain over the heart, shortness of breath, fainting, and irregularity of the heart. If a person suffers from any of these symptoms or sensations of distress on undertaking some physical effort he is accustomed to perform in comfort he should go at once to a doctor for examination instead of worrying about it secretly. The doctor may tell him that he is not suffering from heart trouble, and will also find out what is wrong.

**If there is something wrong with the heart it is well to know it at an early stage, when proper care may bring the heart back to health. In many cases heart trouble is curable, or often serious trouble can be put off for years, if initial symptoms are detected early and proper care taken. Modern methods of diagnosis are so much more delicate and precise than formerly that it is possible to detect disease in its early stages.**

### *Main Causes of Disease*

The main causes of organic heart disease are rheumatism, certain diseases of childhood—such as diphtheria, scarlet fever, measles, and tonsilitis—pneumonia, and improper habits of living. Children's diseases should be followed by a careful medical examination. A child must not be allowed to play strenuously until the doctor is sure there is no danger or injury to the heart.

Syphilis may attack the heart muscle. By using proper drugs under the advice of a qualified physician for overcoming this disease as soon as it appears the danger to the heart will be lessened.

Eating too much, sleeping irregularly, the over-use of stimulants, and excessive tobacco smoking are all common faults which may affect the heart, particularly in persons with heart disease.

**Advice of a physician on the subject of drugs should be obtained. Some drugs are harmful to weak hearts. Therefore, no troubles, such as headaches, that continue for any length of time should be treated without expert diagnosis. The earlier heart disease is discovered, the easier it is to cure.**

Any strain, such as over-exertion or excessive emotion, causes the heart to beat faster, and thus lose part of its time for resting. When we are asleep our hearts beat more slowly. This is one of the reasons why plenty of sleep helps to keep the body in good condition.

### *Proper Exercise*

Exercise must be neither neglected nor overdone. It is agreed that properly conducted athletics are beneficial. On the other hand, exhausting competitive exercises may prove injurious. A twenty-mile tramp with muscles flabby from disuse means exhaustion and strain on the heart without benefit to compensate. It is wise for those who undertake strenuous competitive sports or mountain climbing to undergo graduated training for such forms of athletic achievement. They should also be medically examined occasionally to ensure that they are physically fit to undergo tests of speed and endurance.

High altitudes may have some effect on the heart and circulation. Altitudes up to 3000 feet above the sea level are considered of no importance, and are generally favourable in their effect on people with or without heart trouble provided too much exercise on steep slopes is not indulged in. When, however, we pass the altitude of 10,000 feet we note the beginning of a very distinct effect of high altitude on circulation. In the case of a newcomer to a very high altitude relatively little exercise can be indulged in without undue strain, but after long residence it is usually possible to increase steadily one's capacity for work. Naturally, individuals with serious heart disease should be kept at altitudes below 10,000 feet and preferably under 5000 feet.

### *Precautions*

If a person has heart trouble he should follow the doctor's advice in every way and then forget his heart as far as possible. He should watch his daily living habits, not watch his heart; and should learn to develop a calm, even attitude towards life, and avoid excitement or situations where he becomes angry and aroused. His exercise should be approved by a physician. Anything which makes him short of breath may be too strenuous. If a person is overweight he should try a simple reducing diet.

It is inadvisable to enforce the habits of an invalid on a child convalescing from rheumatic fever, but strenuous exercise, whether physical or mental, should not be taken until recovery is complete. The popularly called "growing pains" are rheumatic in origin, and indicate the necessity for care to avoid damage to the heart. Children with rheumatic heart disease should be warmly clad with wool next the skin, and should be protected against bodily chill, for instance, by quickly changing wet clothes or footwear.

Finally, in few departments of medicine is careful and skilful treatment of so great importance as in that of cardiac disorders, and in few is it so well rewarded. However, let the watchword be prevention. In the right understanding of the human machine lie the keys of health and life.

# Cold Weather and Health

RECORDS of sickness and deaths show that the winter months are by far the most dangerous. This is not due to the cold directly, but to the fact that we are crowded together so much in closed rooms where infectious diseases have a good opportunity to spread. Reasonable precautions can do a great deal towards preventing colds, influenza, and pneumonia at this time of the year.

### *The Children*

Get young children into the open. Exercise in cold weather is exhilarating and promotes a healthy reaction. Wool is the best type of clothing, as it prevents too rapid evaporation of perspiration, and thus avoids danger of chilling. Keep their feet dry.

Have your children join other groups for outside sports in parks or other play areas or open spaces. Public streets are often dangerous for play. Get them back into the house for a complete change of clothing before they become too tired or cold.

Give them hot milk or hot cocoa when they come in at this time of the year. A good nutritious diet should be provided. Cod-liver oil should be given them daily.

If a child has a cold it is safest to keep him in bed for a few days until the acute stage is past. As far as possible, keep children with any suspicious illness, however slight, away from others until they have fully recovered.

The Health Committee of the League of Nations recommends "That immunising a child against diphtheria should be carried out no later than during the pre-school period, after the end of the first year of life. If the children have not been immunised during the pre-school period, they should be immunised if possible during the first year of school attendance."

In any case all children should be protected against diphtheria by being immunised.

### *The Old Folks*

The slowing down of the body's functions makes physical activity dangerous and prevents quick adjustments to changes of temperature. The old folks, therefore, cannot get the benefits of exercise in the cold, open air.

A uniform indoor temperature sufficient for comfort is best. Fresh air should be provided, day and night, but draughts must be avoided. A run-down condition, due to age or sickness, makes easy going for the germs of influenza or pneumonia.

Physical activity should be encouraged sufficient to keep the body functioning normally, but not so much as to produce laboured breathing or fatigue. A healthy mental life is of value to youth and age. The winter should be the time of ample rest and simple food in strict moderation.

# The Farm Home and Kitchen

*Contributed by the Association for Country Education*

## New Clothes from Old

MOST housewives remodel their own or their children's clothes because they need to for reasons of economy, or because, although they like to keep up to date with the fashions, they see no reason to waste good material which still has some wear in it.

The remodelling of clothing is as much an art as the using up of left-over foods to make tempting dishes, and, as with all artistic creations, an ingeniously and attractively remodelled garment gives a pleasurable sense of satisfaction and achievement.

It is indeed praiseworthy for anyone to give thought and effort to produce attractive garments from partly-worn materials. It bespeaks intelligence, thrift, and ingenuity. It also bespeaks good judgment, because if enthusiasm were given a free hand the home-maker may find herself embarking on a remodelling project which will take too much time or effort or which may offer very little hope of really successful results.

So, before putting time and labour into a make-over, analyse the old garment carefully and decide what style it could be converted into, how much work this would need, and what the new material and trimmings would cost.

### *Study Fashion Books*

The first step is to study several fashion books or to do some window-shopping to find out what scope the fashionable styles offer for adding new material or even just the fashionable touch which is characteristic of 1940 winter wear.

The fashionable contrasting jacket and skirt—the one striped or checked, and the other plain—offers scope for using up an old coat, which could make the skirt. Then the jacket could be made of new material and its pockets, revers, etc., trimmed with the scraps left over from the coat. Braidings, cordings, etc., are very fashionable just now, so that many a frock can be remodelled and its tell-tale stitching disguised or hidden by rows of cording.

The stitched pleats which we have used for so many years are not so popular as usual, and in their place are fullness at the back, flares or unpressed pleats. By unpicking the pleats of faded skirts and washing the material and turning it, a good width of material is given, and this can be recut to give the fullness in a more fashionable way.

**When you go to the movies, how long must you grope for a seat in the darkness? If your eyes do not accustom themselves fairly quickly perhaps you need more Vitamin A in your diet. According to at least one scientist, the inability of the eyes to readjust themselves so as to see in the dark is one of the first manifestations of a deficiency of Vitamin A. In fact, his method of diagnosing Vitamin A shortage is by measurement of this reaction.**

### *Stylish Bustles*

The bustle is very stylish, as it gives the modish, narrow-waisted, big-hipped effect. This can be made in the form of a short frill or a gathered apron to hang down the back and be attached to a belt, so that it can be taken off when not wanted. Some basques are cut like a circular collar, and are buttoned around the waist. These are also useful for converting a house frock into a street frock. Button on a basque and put on a hat, gloves, and street shoes, and one has all the appearance of going out in a street suit. Take off the basque, hat, gloves, and heavy shoes, put on house shoes, a string of pearls, or some other dressy accessory, and one is clothed for indoors.

When buying materials for additions to garments the selection requires much care. It will probably be found impossible to match the material exactly, so that it is usually wisest not to attempt to do so, but rather to choose a material that harmonises or contrasts well in colour or texture with the one in use. By using a new piece of a darker material, for instance, for the skirt under a remodelled jacket or tunic, there is no obvious use of old and new material, because this is how the colours of a tunic worn over a skirt **should** contrast. Also, when converting an old plain princess or coat-frock into a redingote the new material used for the front, collar, and strip down the open front of the skirt, if made of floral or figured or spotted material, will be more suitable than if of similar type to that of the garment itself.

### *Choosing Colours*

Regarding colour, "pure" colours in the new material are inadvisable. It is better to use a slightly "greyed" colour or one that is made up of a mixture of several pure colours. This is because the colour of the garment itself has, thanks to sun and wear, become greyed and would look best with another colour of somewhat the same value.

In other words, one should not try to match the shades of colour, but should merely use harmonising or contrasting colours of approximately the same degree of brightness. The popular rust can be worn with last year's nigger brown, the new moss greens with the bottle green of former years, and so on, but not a pure bright blue

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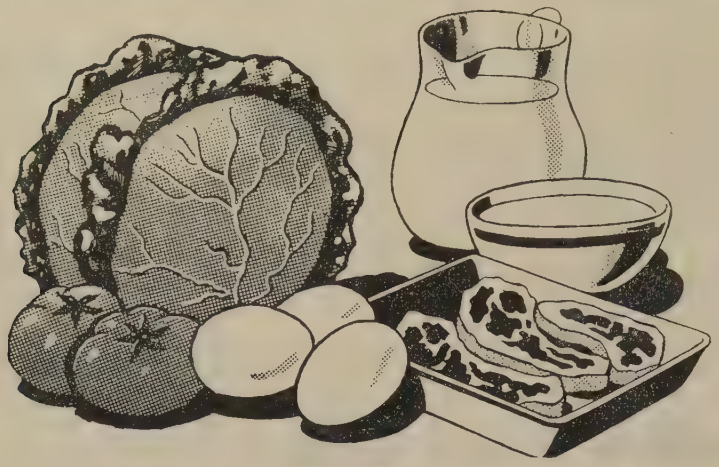

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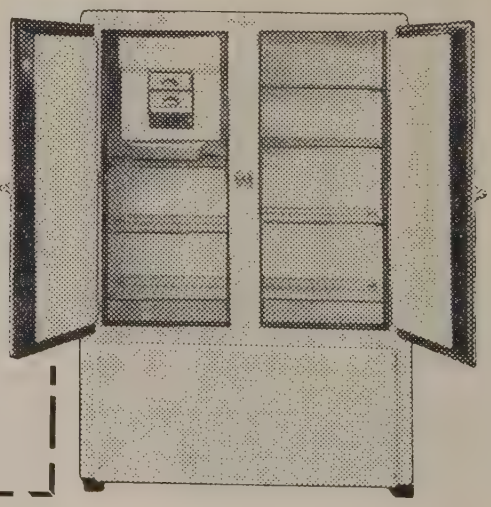

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with an old blue or a vivid green with an old green unless one wants it to show up the shabbiness of the old material. Black and white, can, of course, be worn with anything.

### *How to Remodel*

When remodelling a frock completely, first unpick and clean it, and if it is a material which it would not be safe to wash send it to the cleaner, but otherwise wash it carefully in a good suds and, when dry, press it well with a damp cloth and warm iron on the side which is to be the wrong side in future.

Then cut away all the really worn parts and mark the slightly worn ones. Lay your pattern over the pieces of material and see how they will fit in. Two things to watch carefully are: First, that none of the slightly worn parts will come in a conspicuous place or where there is strain or wear, and secondly, that the straight of the pattern and the straight grain of the material are kept exactly parallel. It will often be a temptation to swing the pattern a little and so to save piecing, but it will not pay, as the hang of the garment will be ruined.

Next piece the bits together, avoiding seams in conspicuous places unless the trimming will cover them. Plenty of pressing is required when piecing is being done so that the seams at all joins may be pressed open. If the joins run with the grain of the material and are well pressed they will be almost invisible.

### *Garments for Children*

Cutting down adult-size garments for children is, of course, much simpler, as there is usually ample material to make the clothes without piecing, and also there are many styles—for example, the pinafore frock or gym tunic—which enable two smaller pieces to be used to form one outfit. Children will appear to better advantage in well-made clothes of old materials than in cheap ready-to-wears, and the wearing qualities will undoubtedly be more satisfactory.

The art of making-over lies in disguising the fact that the garment is remodelled. The final effect, even on much-worn garments, should be the mark of inspiration and not the mark of necessity. If one feels that they are just old things and therefore unworthy of one's best efforts the finished product will very likely be disappointing. If the material is worth making-over it is worth effort that would be necessary in making a perfectly new dress.

## Vitamin Protection for Adults

IN a recent meeting, Dr. H. C. Sherman reported a survey of diet of about 500 persons over 30 years of age made by Dr. Langstroth, San Francisco. The survey showed that incidence of degenerative diseases in this group is in inverse relation to the proportion of protective foods used.

With only a small proportion of calories supplied by milk, cheese, vegetables, and fruits, degenerative diseases were prevalent; when as many as 40 per cent. of the calories were supplied by these protective foods, the incidence was low.

From these results, Dr. Sherman concludes that it would seem wise for adults as well as children to have at least half of their calories furnished by milk, cheese, vegetables, and fruit.

**Do you get enough Vitamin A?**—Do you frequently use carrots? Spinach? Kale? Eggs? Butter? Liver? Whole milk? Cod or halibut liver oil or capsules?

**Do you get enough Vitamin B?**—Do you frequently use whole-grain cereals, such as oatmeal? Whole-wheat bread? Raw vegetables and fruits? Milk?

**Do you get enough Vitamin C?**—Do you frequently use citrus fruits? Tomatoes, canned or raw? Bananas? Apples? Raw cabbage? Celery? Lettuce?

**Do you get enough Vitamin D?**—Are you frequently in direct sunshine, with face, hands, arms, or legs exposed? Do you take cod or halibut liver oil or capsules?

**Do you get enough Vitamin G?**—Do you use at least a pint of milk daily? Do you have several helpings of fruit and vegetables each day? Use dark bread and cereals frequently? Include eggs, liver, or lean meat at least several times a week?

"Each vitamin is entirely specific in the sense that no one or combination of them can take the place of any other one"—"Food and Health," by Dr. H. C. Sherman.

## Tips in Making Marmalade

### *Remember*

(1) About 3lb. of citrus fruit makes a convenient-sized boiling of marmalade.

(2) Do not have fruit too ripe. Use fully-coloured, but still rather sour oranges, Poorman oranges, or grapefruit.

(3) If sweet oranges or grapefruit are used or the Poorman oranges are matured and sweet, include not less than three lemons in each boiling.

(4) Wash and weigh the fruit.

(5) Finely shred, or else squeeze out, the juice and mince the pulp and skins.

(6) Add water to juice and skins in proportion to 3 pints (6 cups) for every 1lb. of citrus fruit used.

(7) Soak overnight or not, as convenient. Bring slowly to boil and boil at a moderate speed for 1 to 1¼ hours. (If boiled too fast, too much water will evaporate before the fruit is softened; if too slowly, too little will evaporate and the time for second boiling will be greatly lengthened.)

(8) Add sugar in proportion of 3lb. for every 1lb. of citrus fruit used.

(9) Continue boiling for 15 to 45 minutes, or until marmalade sets.

(10) If less bitter marmalade is wanted, thinly peel half of the fruits before slicing them, and discard this peel.

(11) If thin, golden shreds are wanted in a clear jelly, peel all the fruits and proceed as usual with the peeled fruits. Meantime, boiling the thinly-peeled orange skins in water until quite tender, and then strain them and slice them thinly. Add these shreds to the rest of the marmalade when adding the sugar.

(12) The most common faults in marmalade are:—

(a) Too stiff—caused by too much fruit used in proportion to water and sugar, or else boiled too much either in first or second boiling.

(b) Syrupy—caused by fruit being not acid enough, or possibly by too much water or sugar.

(c) Too dark—caused by boiling too long after sugar was added.

(d) Dark and toffee-like—too much sugar, too little acid, and boiled too long after sugar was added.

# *Recipes*

### RASPBERRY CHOCOLATE SPONGE.

¼ lb. butter.
1¼ cup flour.
5 oz. sugar.
1 teaspoon soda.
3 eggs.
½ teaspoon cream of tartar.
1 tablespoon raspberry jam.
3 tablespoons cocoa.

**Method.**—Cream butter and sugar. Add eggs. Add cocoa mixed with ¼ cup hot water. Add jam. Add dry ingredients.

### HUNGARIAN KISSES.

7 oz. butter.
1 egg yolk.
1 oz. cocoa.
8 oz. flour.
4 oz. sugar.
2 oz. chocolate melted over hot water.

**Method.**—Cream butter, add the sugar and continue creaming. Add the egg yolk and melted chocolate. Stir in sifted flour and cocoa. Roll into balls with two raisins inside. Put nut on top and glaze with egg white.

### FRUIT FOOL.

½ pint milk.
⅛ teaspoon salt.
Bring to boil and add to
2 egg yolks beaten with
½ oz. cornflour and
1¼ oz. sugar.

**Method.**—Cook over boiling water till thick. Cool and combine with two egg whites beaten till stiff with 1¼ oz. sugar. Add to equal quantities of fruit pulp and add ½ cup whipped cream.

### SPANISH COFFEE CREAM.

Gelatin, 2 tablespoons.
Vanilla, 1 teaspoon.
Cream, 1 cup.
Salt, ¼ teaspoon.
Coffee infusion, 3 cups.
Eggs, 3.
Sugar, ½ cup.

**Method.**—Heat coffee to boiling point. Pour over sugar, egg yolks, salt, well beaten. Cook in double boiler for five minutes, stirring constantly. Add gelatin that has been softened in cream. Heat again. Allow to cool and partially set. Fold in egg whites stiffly beaten. Chill.

### PLAIN ICE CREAM.

**Custard:—**

1 cup milk.
2 egg yolks.
1 tablespoon flour.
⅛ teaspoon salt.
½ cup sugar.

Combine the flour and salt with the yolks. Scald milk, add gradually to the yolk mixture and cook over hot water till custard thickens. Add the sugar. Cool and whip custard 10-15 minutes and combine with whipped cream. Whip together till thoroughly blended and add ½ teaspoon gelatin melted in 1 tablespoon warm water, while still beating. Turn into refrigerator tray and leave undisturbed for 3-4 hours, with refrigerator turned to "cold."

### ICE CREAM VARIATIONS.

(1) Vanilla.—Add 1 teaspoon vanilla.

(2) Fuit.—Add about 1 cup fruit pulp when mixture is beginning to thicken in freezer.

(3) Chocolate.—Grate 1oz chocolate, melt over hot water, and add to the hot custard.

(4) Ginger.—Add 1 tablespoon finely-chopped ginger.

(5) Caramel.—Caramelise the sugar given in the recipe. Add to it the cold milk, and beat till the caramel melts.

(6) Peppermint.—Peppermint stick, 1; milk, 1 cup, egg yolk, 3 (or 1 egg); cream, 1 cup. Method: Crush peppermint stick and add to the milk. Warm and pour over the beaten yolks. Cook till mixture thickens, cool, add whipped cream, and freeze as usual.

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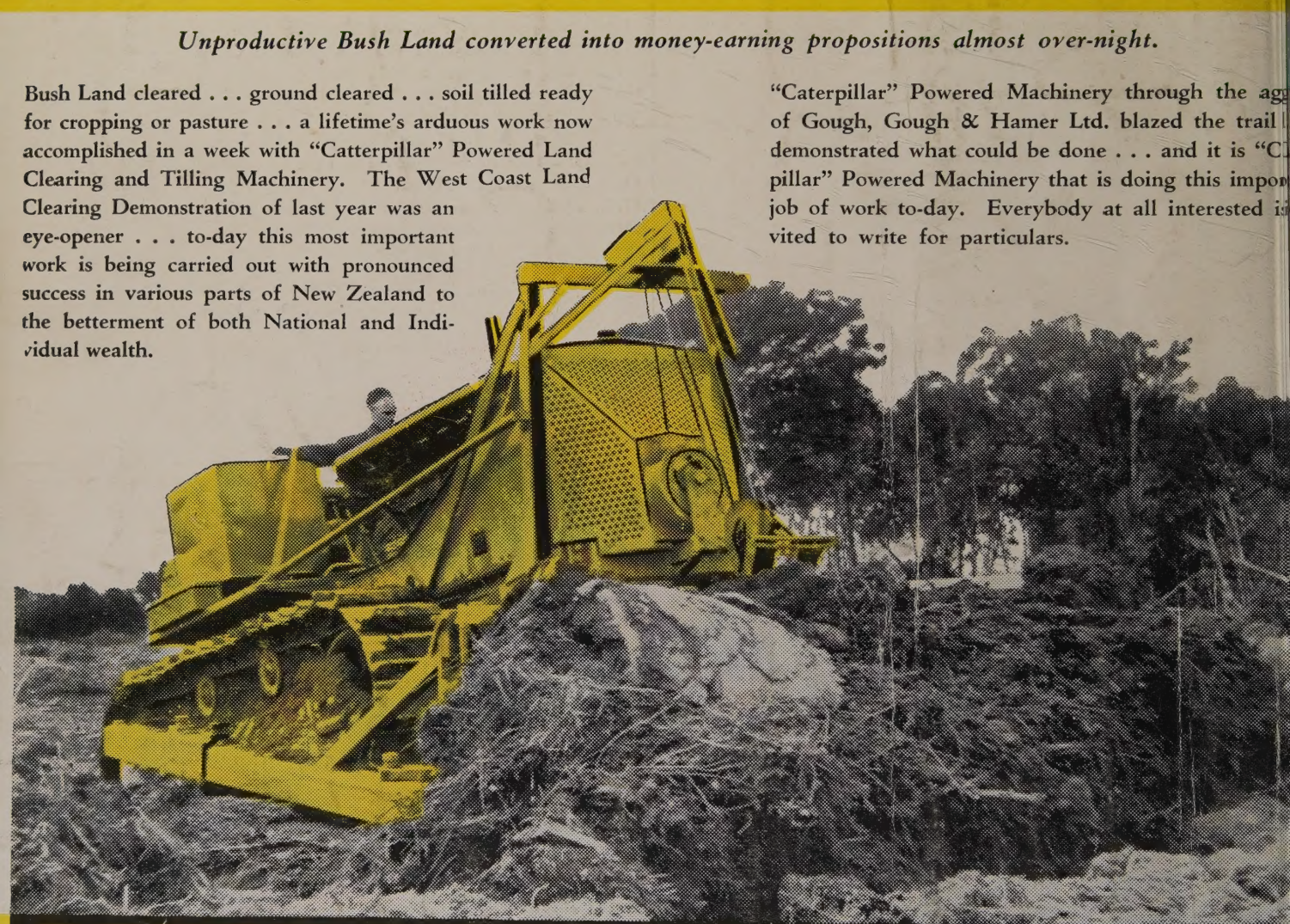

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